



2026-2027

Course of Study

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Contents

Introduction	6
Mathematics	6
Curriculum sources	6
Dimensions.....	6
Beast Academy	6
Art of Problem Solving	6
College-level Mathematics.....	7
Course sequence	7
Course information	8
Telra Math 0	8
Telra Math 0.5	10
Telra Math 1	11
Telra Math 1.5	13
Telra Math 2	14
Telra Math 2.5	15
Telra Math 3	17
Telra Math 3.5	18
Telra Math 4	19
Telra Math 4.5	20
Telra Math 5	22
Telra Math 5.5	23
Telra Math 6	24
Telra Math 6.5	26
Telra Math 7	27
Telra Math 7.5	29
Telra Math 8	31
Telra Math 8B/C	33
Telra Math 9	35
Telra Math 10	37
Telra Math 11	39
Social Studies	40
Curriculum sources	40

Engage NY	40
OpenStax.....	40
The Modern States.....	40
College-level Social Sciences	40
Course sequence.....	41
Course information	43
Kindergarten.....	43
1st Grade	44
2nd Grade.....	45
3rd Grade	47
4th Grade	48
5th Grade	49
6th Grade	51
World History	52
Early Human Societies	52
States and Empires in the Americas and Africa	53
An Age of Religion	53
Connections Across Continents	54
An Age of Revolutions.....	54
The Modern World	54
American History.....	55
Foundations of America	55
Revolution and Nation Building	56
Division and Civil War.....	56
Industrialization and Reform.....	56
Modern America	57
Contemporary America	57
Modern States: American Government	57
Economics and Personal Finance	58
Science	58
Curriculum sources	58
Core Knowledge	58
Conceptual Integrated Science Explorations.....	58

College-level Science	58
Course sequence	58
Course information	60
Kindergarten	60
Earth Science	61
1st Grade	62
Physical Science	62
Life Science	62
Astronomy	62
2nd Grade	63
Physical Science	63
Life Science	63
Earth Science	63
3rd Grade	64
Physical Science	64
Life Science	64
Earth Science	64
4th Grade	65
Physical Science	65
Life Science	65
Earth Science	65
Astronomy	66
5th Grade	66
Physical Science	66
Earth Science	66
6th Grade	67
Earth Science	67
Astronomy	67
7th Grade	67
Biology	67
8th Grade	68
Chemistry	68
Physics	69

English	69
Curriculum sources	69
Core Knowledge Language Arts	70
Shurley Grammar	70
Zaner-Bloser Handwriting	70
William and Mary Literature Units.....	70
Ormiston Academies Trust English.....	70
Classical Academic Press	70
College-level English.....	70
Course sequence	71
Primary Grades (K-3 rd Grade)	71
Intermediate ELA (4 th -5 th Grade).....	72
Middle School and Advanced ELA (6 th -8 th Grade)	72
High School English	73
Course information	73
Listening and Learning: Kindergarten	73
CKLA Listening and Learning	73
Shurley Grammar	74
Zaner-Bloser Handwriting	74
Listening and Learning: 1 st Grade.....	74
CKLA Listening and Learning	74
Shurley Grammar	76
Zaner-Bloser Handwriting	76
Listening and Learning: 2 nd Grade.....	76
CKLA Listening and Learning	76
Shurley Grammar	77
Zaner-Bloser Handwriting	77
Listening and Learning: 3 rd Grade	77
CKLA Listening and Learning	78
Shurley Grammar	79
Zaner-Bloser Handwriting	79
Primary ELA Skills 1	80
Primary ELA Skills 2	81

Primary ELA Skills 3	82
Primary ELA Skills 4	83
Primary ELA Skills 5/Intermediate ELA 1	84
Core Knowledge	84
Caesar’s English.....	85
Optional Unit: William & Mary	85
Primary ELA 6/Intermediate ELA 2.....	85
Core Knowledge	86
Caesar’s English.....	87
Optional Unit: William & Mary	87
Intermediate ELA 3.....	87
Core Knowledge	87
Shurley Grammar	88
Optional Unit: William & Mary	88
Intermediate ELA 4.....	89
Core Knowledge	89
Shurley Grammar	90
Optional Unit: William & Mary	90
Middle School ELA 1.....	91
OAT	91
Word Withing the Word I.....	91
Shurley Grammar	92
Middle School ELA 2.....	92
OAT	92
Word Withing the Word II.....	93
Shurley Grammar	93
Advanced English 1	93
OAT	93
Advanced English 2	94
OAT	94
The Discovery of Deduction	95
Rhetoric / Honors English 2.....	95
Rhetoric Alive	95

Introduction

This gives the framework for the curriculum, standards, and progression of studies at Telra Institute. In this guide, you will find minimum standards for performance for each grade level. Know that students may follow alternate pathways and access higher level courses than the courses listed as the minimum for the grade. Students who demonstrate a need for instruction below the minimum level for their numerical grade level will be referred for intervention and may be retained.

Mathematics

Curriculum sources

Dimensions

At the most foundational level, students begin mathematics instruction using Singapore Math through the Dimensions curriculum. Singapore math focuses on mastery of concepts through the use of the concrete, pictorial, abstract (CPA) progression. Students learn to think mathematically and apply the concepts they are learning in new ways. This serves as the basis for our students to become successful problem solvers as they progress through their time at Telra.

Beast Academy

Beast Academy builds on the foundation that began in the Dimensions curriculum by continuing to provide math challenges to students that require application of concepts rather than merely memorization. Beast Academy is presented in a comic book format with monster characters that students follow from Level 1 through Level 5. Students join the monsters on a journey to become critical thinkers and apply higher-order reasoning skills. By tackling challenging problems, students gain resilience, creativity and perseverance that can be applied to all areas, not just mathematics. Beast Academy is puzzle-based and provides opportunities for students to think differently to solve problems.

Art of Problem Solving

After Beast Academy, students dive into the introductory series of Art of Problem Solving's (AoPS) middle and high school curriculum. The curriculum is designed for high-performing math students to present broader and deeper explorations of challenging mathematics than typical math curriculum. Like Beast Academy, AoPS focuses on problem-solving skills, critical thinking, and application of mathematical concepts.

College-level Mathematics

Additional mathematics courses in 9th grade and beyond at Telra are typically taught by college faculty using a variety of college textbooks in topics such as single and multivariable Calculus, Differential Equations, and Linear Algebra. Refer to the Central Piedmont Community College course catalog for further details.

Course sequence

Courses must be completed no later than the end of the grade level listed in the right-hand column of the table below with a grade of 60% or higher to be considered passing. Students who demonstrate a need for instruction below the minimum level for their numerical grade level will be referred for intervention and may be retained.

Course	Completed No Later Than...
Telra Math 0 All Kindergarten and Select 1st Grade Standards	End of Kindergarten
Telra Math 0.5 Select Kindergarten, 1st, and 2nd Grade Standards	
Telra Math 1 All 1st and Select 2nd Grade Standards	End of 1 st Grade
Telra Math 1.5 Select 1st, 2nd, and 5th Grade Standards (5.OA.1)	
Telra Math 2 Select 2nd-5th Grade Standards	End of 2 nd Grade
Telra Math 2.5 Select 2nd-5th Grade Standards	
Telra Math 3 Select 2nd-6th Grade Standards	End of 3 rd Grade
Telra Math 3.5 Select 3rd-8th Grade Standards	End of 4 th Grade
Telra Math 4 Select 4th-8th Grade Standards	End of 5 th Grade
Telra Math 4.5 Select 3rd-8th Grade Standards	
Telra Math 5 Select 5th-8th Grade Standards	End of 6 th Grade
Telra Math 6 Preparation for Math 1	End of 7 th Grade
Telra Math 7 Students with 60% or above take the Math 1 EOC at the end of this course and earn Math 1 credit	End of 8 th Grade
Telra Math 7.5	

Students with 60% or above take the Math 1 EOC at the end of this course and earn Math 1 credit	
Telra Math 8 Students with 60% or above earn Math 2 credit through this course.	End of 9 th Grade
Telra Math 9 Students have the opportunity to earn Math 3 credit through this course.	End of 10 th Grade
Telra Math 10 Students have the opportunity to earn Math 4 credit through this course.	End of 11 th Grade
Telra Math 11 This course is intended to extend student knowledge beyond Telra Math 10.	
Various college-listed mathematics courses	

Course information

Telra Math 0

Telra Math 0, using Dimensions KA-KB, provides students with foundational math concepts in the domains of Counting and Cardinality, Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry. Students build their knowledge by moving from concrete representations to pictorial representations, ending with the abstract.

Chapter 1: Match, Sort, and Classify

- Students will classify, sort, and compare objects by size, texture, shape, size, and orientation.
- Standards: K.G.1, K.MD.3

Chapter 2: Numbers to 5

- Students will learn sequential counting to and from 5, one-to-one correspondence up to 5, and recognizing/writing of numerals 0-5.
- Standards: K.CC.1, K.CC.3, K.CC.4

Chapter 3: Numbers to 10

- Students will understand that our numeration system is a base ten system by using ten-frame cards. Students will also write numerals 0-9 and notice that while 10 has two digits, it represents one number.
- Standards: K.CC.1, K.CC.3, K.CC.4, K.G.1

Chapter 4: Shapes and Solids

- Students will investigate two-dimensional and three-dimensional shapes and identify these shapes in the world. Students will focus on attributes of shapes such as boundaries, sides, corners, size, orientation, and position.
- Standards: K.G.1, K.G.2, K.G.3, K.G.4, K.G.5, K.G.6, K.MD.1, K.MD.2

Chapter 5: Compare Height, Length, Width, and Capacity

- Students will focus on direct and indirect measurement of objects while comparing length, weight, and capacity.
- Standards: K.MD.1, K.MD.2

Chapter 6: Comparing Numbers Withing 10

- Students will mathematically compare by quantity, moving from comparing numbers of objects to comparing values of numerals.
- Standards: K.CC.6, K.CC.7

Chapter 7: Numbers to 20

- Students will expand their understanding of the base 10 system by focusing on numbers 1-20 with a special emphasis on understanding ten numbers as 10 and some more.
- Standards: K.CC.1, K.CC.2, K.CC.3, K.CC.5, K.NBT.1

Chapter 8: Number Bonds

- Students will learn to use number bonds to 10 as pictorial representations of a whole and its parts.
- Standards: K.OA.1, K.OA.3, K.OA.4, K.OA.5

Chapter 9: Addition

- Students will apply their knowledge of number bonds to addition equations up to a sum of 10.
- Standards: K.OA.1, K.OA.2, K.OA.5

Chapter 10: Subtraction

- Students will apply their knowledge of number bonds to subtraction equations within 10 using strategies such as counting back.
- Standards: K.OA.1, K.OA.2, K.OA.3, K.OA.5

Chapter 11: Addition and Subtraction

- Students will focus on the relationship between addition and subtraction and represent this relationship as equations.
- Standards: K.OA.1, K.OA.2, K.OA.5

Chapter 12: Numbers to 100

- Students will count by 1s, 5s, and 10s to 100 and will interpret numbers to 100 as tens and ones.
- Standards: K.CC.1

Chapter 13: Time

- Students will tell time to the hour on both analog and digital clocks and understand the concept of time passing.
- Standards: 1.MD.3

Chapter 14: Money

- Students will learn the name and value of pennies, nickels, and dimes and practice skip counting by fives and tens using coins.
- Standards: 1.MD.5

Telra Math 0.5

Dimensions KB provides students with foundational math concepts in the domains of Counting and Cardinality, Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry. Beast 1A-1B builds on the skills from Dimensions KB while pushing students to begin thinking more critically and to approach problems in novel ways. Students may place into this course.

Chapter 7: Numbers to 20

- Students will expand their understanding of the base 10 system by focusing on numbers 1-20 with a special emphasis on understanding ten numbers as 10 and some more.
- Standards: K.CC.1, K.CC.2, K.CC.3, K.CC.5, K.NBT.1

Chapter 8: Number Bonds

- Students will learn to use number bonds to 10 as pictorial representations of a whole and its parts.
- Standards: K.OA.1, K.OA.3, K.OA.4, K.OA.5

Chapter 9: Addition

- Students will apply their knowledge of number bonds to addition equations up to a sum of 10.
- Standards: K.OA.1, K.OA.2, K.OA.5

Chapter 10: Subtraction

- Students will apply their knowledge of number bonds to subtraction equations within 10 using strategies such as counting back.
- Standards: K.OA.1, K.OA.2, K.OA.3, K.OA.5

Chapter 11: Addition and Subtraction

- Students will focus on the relationship between addition and subtraction and represent this relationship as equations.
- Standards: K.OA.1, K.OA.2, K.OA.5

Chapter 12: Numbers to 100

- Students will count by 1s, 5s, and 10s to 100 and will interpret numbers to 100 as tens and ones.
- Standards: K.CC.1

Chapter 13: Time

- Students will tell time to the hour on both analog and digital clocks and understand the concept of time passing.
- Standards: 1.MD.3

Chapter 14: Money

- Students will learn the name and value of pennies, nickels, and dimes and practice skip counting by fives and tens using coins.
- Standards: 1.MD.5

Beast 1 Chapter 1: Counting

- Students work on one-to-one correspondence, gain practice recognizing small amounts, and gain fluency with numbers to 100. Students spend time focusing on the number ten and its relationship to place value.
- Standards: K.CC.1, K.CC.3, K.CC.4, K.CC.5, 1.OA.1, 1.OA.6, 1.NBT.1, 1.NBT.2

Beast 1 Chapter 2: Shapes

- Students will learn the names and properties of basic shapes and practice drawing them. Students will learn to recognize rotations/reflections of shapes, as well as to split and combine shapes.
- Standards: K.G.5, 1.G.1, 1.G.2, 2.G.1

Beast 1 Chapter 3: Comparing

- Students will compare and order amounts using the following symbols: $<$, $>$, and $=$. Students will also compare lengths and distances without measuring.
- Standards: K.CC.6, K.MD.2, 1.OA.1, 1.NBT.2, 1.NBT.3, 1.MD.2, 1.MD.4

Beast 1 Chapter 4: Addition

- Students will work with addition equations to read and interpret math symbols. Students will use the commutative property, compensation, and adding/making ten when completing addition equations.
- Standards: 1.OA.1, 1.OA.2, 1.OA.3, 1.OA.5, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5

Beast 1 Chapter 5: Subtraction

- Students will learn that subtraction means both taking one amount away from another and finding the distance between two amounts.
- Standards: 1.OA.1, 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5, 2.NBT.5

Beast 1 Chapter 6: Categories

- Students will explore categories of numbers, such as odds and evens, perfect squares, and prime numbers. Students will be introduced to Venn Diagrams.
- Standards: 1.G.1, 1.G.2, 1.MD.4, 2.G.1, 2.G.2

Telra Math 1

Beast Academy 1 is designed for students ages 6-8 and covers standards from kindergarten through 2nd grade. This curriculum takes students from the basics of Dimensions K and allows them to apply their knowledge to novel problem types. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry.

Beast 1 Chapter 1: Counting

- Students work on one-to-one correspondence, gain practice recognizing small amounts, and gain fluency with numbers to 100. Students spend time focusing on the number ten and its relationship to place value.
- Standards: K.CC.1, K.CC.3, K.CC.4, K.CC.5, 1.OA.1, 1.OA.6, 1.NBT.1, 1.NBT.2

Beast 1 Chapter 2: Shapes

- Students will learn the names and properties of basic shapes and practice drawing them. Students will learn to recognize rotations/reflections of shapes, as well as to split and combine shapes.
- Standards: K.G.5, 1.G.1, 1.G.2, 2.G.1

Beast 1 Chapter 3: Comparing

- Students will compare and order amounts using the following symbols: $<$, $>$, and $=$. Students will also compare lengths and distances without measuring.
- Standards: K.CC.6, K.MD.2, 1.OA.1, 1.NBT.2, 1.NBT.3, 1.MD.2, 1.MD.4

Beast 1 Chapter 4: Addition

- Students will work with addition equations to read and interpret math symbols. Students will use the commutative property, compensation, and adding/making ten when completing addition equations.
- Standards: 1.OA.1, 1.OA.2, 1.OA.3, 1.OA.5, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5

Beast 1 Chapter 5: Subtraction

- Students will learn that subtraction means both taking one amount away from another and finding the distance between two amounts.
- Standards: 1.OA.1, 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5, 2.NBT.5

Beast 1 Chapter 6: Categories

- Students will explore categories of numbers, such as odds and evens, perfect squares, and prime numbers. Students will be introduced to Venn Diagrams.
- Standards: 1.G.1, 1.G.2, 1.MD.4, 2.G.1, 2.G.2

Beast 1 Chapter 7: Addition & Subtraction

- Students will use number lines to solve addition and subtraction problems. Students will apply their understanding of place value to addition and subtraction.
- Standards: 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5, 1.NBT.6, 1.NBT.8

Beast 1 Chapter 8: Comparing

- Students will apply the comparison symbols by ordering number sets from least to greatest. Students will compare sums and differences without adding or subtracting. This chapter serves as an introduction to algebraic thinking.
- Standards: 1.OA.1, 1.OA.3, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.3, 1.NBT.4, 1.NBT.5, 1.NBT.6, 2.OA.1

Beast 1 Chapter 9: Patterns

- Students will work with shape patterns and begin skip-counting by the numbers 2-9. Students will also explore the Fibonacci sequence, perfect squares, and triangular numbers.
- Standards: 1.OA.1, 1.OA.6, 1.NBT.4, 2.NBT.2

Beast 1 Chapter 10: Big Numbers

- Students will add small amounts to three-digit numbers by counting up and using number lines. Students will use place value to add tens. Students will write numbers in expanded form.

- Standards: 1.OA.3, 1.OA.5, 1.NBT.1, 1.NBT.2, 1.NBT.5, 2.NBT.1, 2.NBT.2, 2.NBT.3, 2.NBT.7, 2.MD.6

Beast 1 Chapter 11: Measurement

- Students will compare and measure lengths using units. Students will measure time in minutes, hours, days, weeks, and months.
- Standards: 1.OA.1, 1.OA.5, 1.OA.6, 1.MD.1, 1.MD.2, 1.MD.3, 1.MD.4, 1.G.1, 2.MD.2

Beast 1 Chapter 12: Problem Solving

- Students will use words like left, right, top, bottom, and middle to follow directions. Students will use the four cardinal directions and consider sequential order.
- Standards: 1.OA.1, 1.OA.3, 1.OA.7, 1.OA.8

Telra Math 1.5

Beast Academy 1 is designed for students ages 6-8 and covers standards from kindergarten through 2nd grade. Students in this course begin halfway through Beast 1 and complete half of Beast 2. Beast Academy 2 is designed for students ages 7-9. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry.

Beast 1 Chapter 7: Addition & Subtraction

- Students will use number lines to solve addition and subtraction problems. Students will apply their understanding of place value to addition and subtraction.
- Standards: 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.8, 1.NBT.2, 1.NBT.4, 1.NBT.5, 1.NBT.6, 1.NBT.8

Beast 1 Chapter 8: Comparing

- Students will apply the comparison symbols by ordering number sets from least to greatest. Students will compare sums and differences without adding or subtracting. This chapter serves as an introduction to algebraic thinking.
- Standards: 1.OA.1, 1.OA.3, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.3, 1.NBT.4, 1.NBT.5, 1.NBT.6, 2.OA.1

Beast 1 Chapter 9: Patterns

- Students will work with shape patterns and begin skip-counting by the numbers 2-9. Students will also explore the Fibonacci sequence, perfect squares, and triangular numbers.
- Standards: 1.OA.1, 1.OA.6, 1.NBT.4, 2.NBT.2

Beast 1 Chapter 10: Big Numbers

- Students will add small amounts to three-digit numbers by counting up and using number lines. Students will use place value to add tens. Students will write numbers in expanded form.
- Standards: 1.OA.3, 1.OA.5, 1.NBT.1, 1.NBT.2, 1.NBT.5, 2.NBT.1, 2.NBT.2, 2.NBT.3, 2.NBT.7, 2.MD.6

Beast 1 Chapter 11: Measurement

- Students will compare and measure lengths using units. Students will measure time in minutes, hours, days, weeks, and months.
- Standards: 1.OA.1, 1.OA.5, 1.OA.6, 1.MD.1, 1.MD.2, 1.MD.3, 1.MD.4, 1.G.1, 2.MD.2

Beast 1 Chapter 12: Problem Solving

- Students will use words like left, right, top, bottom, and middle to follow directions. Students will use the four cardinal directions and consider sequential order.

- Standards: 1.OA.1, 1.OA.3, 1.OA.7, 1.OA.8

Beast 2 Chapter 1: Place Value

- Students will use pirate numbers to understanding breaking and regrouping strategies in the base 10 system.
- Standards: 2.OA.1, 2.NBT.1, 2.NBT.3, 2.NBT.5, 2.NBT.8

Beast 2 Chapter 2: Comparing

- Students will deepen their understanding of place value by using number lines to find distances between two points.
- Standards: 2.NBT.4, 2.NBT.5, 2.NBT.6, 2.MD.5, 2.MD.6

Beast 2 Chapter 3: Addition

- Students will begin to work with 2- and 3-digit addition equations through their understanding of place value and mental computation strategies.
- Standards: 2.NBT.5, 2.NBT.7

Beast 2 Chapter 4: Subtraction

- Students will focus on the relationship between addition and subtraction and employ models of subtraction that center around place value and mental computation strategies.
- Standards: 2.OA.1, 2.NBT.5, 2.NBT.7

Beast 2 Chapter 5: Expressions

- Students will learn to evaluate expressions through an introduction to parentheses and variables. Students will simplify expressions and solve basic equations.
- Standards: 2.OA.1, 2.NBT.5, 2.NBT.7, 5.OA.1

Beast 2 Chapter 6: Problem Solving

- Students will apply their knowledge of problem solving to unfamiliar problems. This chapter can be frustrating at first, so students focus on the idea that failure is a vital part of learning. Students will play, fiddle, experiment, fail and repeat this process to become resourceful, resilient problem solvers.
- Standards: Standards for Mathematical Practice

Telra Math 2

Beast Academy 2 is designed for students ages 7-9. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry. Standards covered in this course range from 2nd-4th Grade standards.

Beast 2 Chapter 1: Place Value

- Students will use pirate numbers to understanding breaking and regrouping strategies in the base 10 system.
- Standards: 2.OA.1, 2.NBT.1, 2.NBT.3, 2.NBT.5, 2.NBT.8

Beast 2 Chapter 2: Comparing

- Students will deepen their understanding of place value by using number lines to find distances between two points.
- Standards: 2.NBT.4, 2.NBT.5, 2.NBT.6, 2.MD.5, 2.MD.6

Beast 2 Chapter 3: Addition

- Students will begin to work with 2- and 3-digit addition equations through their understanding of place value and mental computation strategies.

- Standards: 2.NBT.5, 2.NBT.7

Beast 2 Chapter 4: Subtraction

- Students will focus on the relationship between addition and subtraction and employ models of subtraction that center around place value and mental computation strategies.
- Standards: 2.OA.1, 2.NBT.5, 2.NBT.7

Beast 2 Chapter 5: Expressions

- Students will learn to evaluate expressions through an introduction to parentheses and variables. Students will simplify expressions and solve basic equations.
- Standards: 2.OA.1, 2.NBT.5, 2.NBT.7, 5.OA.1

Beast 2 Chapter 6: Problem Solving

- Students will apply their knowledge of problem solving to unfamiliar problems. This chapter can be frustrating at first, so students focus on the idea that failure is a vital part of learning. Students will play, fiddle, experiment, fail and repeat this process to become resourceful, resilient problem solvers.
- Standards: Standards for Mathematical Practice

Beast 2 Chapter 7: Measurement

- Students will measure lengths in standard units, such as inches and centimeters. Students will understand the importance of including units in their answers.
- Standards: 2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4

Beast 2 Chapter 8: Strategies + & -

- Students will read and understand math expression so they can rearrange, rewrite, and simplify them efficiently.
- Standards: 2.OA.1, 2.OA.2, 2.NBT.5, 2.NBT.6, 2.NBT.9, 3.NBT.2

Beast 2 Chapter 9: Odds and Evens

- Students will apply the basic properties of even and odd numbers to find clever ways to approach different problem types.
- Standards: 2.OA.3, 3.OA.9

Beast 2 Chapter 10: Big Numbers

- Students will increase their fluency with operations as they apply their skills with adding and subtracting 3-digit numbers to numbers greater than 999.
- Standards: 2.NBT.1, 2.NBT.7, 4.NBT.1, 4.NBT.2, 4.NBT.4

Beast 2 Chapter 11: Algorithms + & -

- Students will apply their understanding of addition and subtraction to the use of algorithms. Students will determine when it is most helpful to use algorithms to solve problems and when mental computation and other strategies are more appropriate.
- Standards: 2.OA.1, 2.NBT.7, 2.NBT.9, 3.NBT.2, 4.NBT.4

Beast 2 Chapter 12: Problem Solving

- Students will continue to practice the application of the problem solving skills in this chapter, focusing on organizing information, looking for patterns, solving simpler problems, and creating models.
- Standards: Standards for Mathematical Practice

Telra Math 2.5

Beast Academy 2 is designed for students ages 7-9. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten, Measurement and Data, and Geometry. Beast Academy 3 is designed for students ages 9-10 and covers the same skill domains as Beast Academy 2 at a higher level. All

Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 2nd-5th Grade standards.

Beast 2 Chapter 7: Measurement

- Students will measure lengths in standard units, such as inches and centimeters. Students will understand the importance of including units in their answers.
- Standards: 2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4

Beast 2 Chapter 8: Strategies + & -

- Students will read and understand math expression so they can rearrange, rewrite, and simplify them efficiently.
- Standards: 2.OA.1, 2.OA.2, 2.NBT.5, 2.NBT.6, 2.NBT.9, 3.NBT.2

Beast 2 Chapter 9: Odds and Evens

- Students will apply the basic properties of even and odd numbers to find clever ways to approach different problem types.
- Standards: 2.OA.3, 3.OA.9

Beast 2 Chapter 10: Big Numbers

- Students will increase their fluency with operations as they apply their skills with adding and subtracting 3-digit numbers to numbers greater than 999.
- Standards: 2.NBT.1, 2.NBT.7, 4.NBT.1, 4.NBT.2, 4.NBT.4

Beast 2 Chapter 11: Algorithms + & -

- Students will apply their understanding of addition and subtraction to the use of algorithms. Students will determine when it is most helpful to use algorithms to solve problems and when mental computation and other strategies are more appropriate.
- Standards: 2.OA.1, 2.NBT.7, 2.NBT.9, 3.NBT.2, 4.NBT.4

Beast 2 Chapter 12: Problem Solving

- Students will continue to practice the application of the problem solving skills in this chapter, focusing on organizing information, looking for patterns, solving simpler problems, and creating models.
- Standards: Standards for Mathematical Practice

Beast 3 Chapter 1: Shapes

- Students will classify shapes through rigorous mathematical definitions. Students will focus on angles, triangles, and quadrilaterals.
- Standards: 2.G.1, 3.G.1, 4.G.1, 4.G.2,

Beast 3 Chapter 2: Skip Counting

- Students will skip-count and notice patterns as a bridge to multiplication.
- Standards: 2.OA.4, 3.OA.9,

Beast 3 Chapter 3: Perimeter and Area

- Students will determine the perimeter and area of shapes. Students will determine perimeter by adding the sides of shapes and find unknown side lengths using what they do know. Students will focus on the idea that area is the number of square units inside of a shape.
- Standards: 2.OA.4, 2.G.2, 3.OA.9, 3.MD.5, 3.MD.6, 3.MD.7, 3.MD.8

Beast 3 Chapter 4: Multiplication

- Students will work to memorize their multiplication facts and build on their knowledge of skip counting. Students will use strategies such as reordering, multiplying by 4 and 8, multiplying by 5, and combining strategies to some problems.
- Standards: 2.OA.1, 3.OA.1, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.8, 3.OA.9, 3.NBT.3, 3.MD.7, 3.MD.8

Beast 3 Chapter 5: Perfect Squares

- Students will continue their study of multiplication through an exploration of perfect squares through area models.
- Standards: 3.OA.3, 3.OA.7, 3.MD.5, 3.MD.6, 3.MD.7, 3.MD.8, 4.MD.3

Beast 3 Chapter 6: The Distributive Property

- Students will use the distributive property to split multiplication problems into parts and add the products of those parts to get the final product. Students will also focus on order of operations.
- Standards: 3.OA.4, 3.OA.5, 3.NBT.3, 3.MD.7, 5.OA.1, 5.OA.2

Telra Math 3

Beast Academy 3 is designed for students ages 9-10. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten and Fractions, Measurement and Data, and Geometry. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 2nd-6th Grade standards.

Beast 3 Chapter 1: Shapes

- Students will classify shapes through rigorous mathematical definitions. Students will focus on angles, triangles, and quadrilaterals.
- Standards: 2.G.1, 3.G.1, 4.G.1, 4.G.2,

Beast 3 Chapter 2: Skip Counting

- Students will skip-count and notice patterns as a bridge to multiplication.
- Standards: 2.OA.4, 3.OA.9,

Beast 3 Chapter 3: Perimeter and Area

- Students will determine the perimeter and area of shapes. Students will determine perimeter by adding the sides of shapes and find unknown side lengths using what they do know. Students will focus on the idea that area is the number of square units inside of a shape.
- Standards: 2.OA.4, 2.G.2, 3.OA.9, 3.MD.5, 3.MD.6, 3.MD.7, 3.MD.8

Beast 3 Chapter 4: Multiplication

- Students will work to memorize their multiplication facts and build on their knowledge of skip counting. Students will use strategies such as reordering, multiplying by 4 and 8, multiplying by 5, and combining strategies to some problems.
- Standards: 2.OA.4, 3.OA.1, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.8, 3.OA.9, 3.NBT.3, 3.MD.7, 3.MD.8

Beast 3 Chapter 5: Perfect Squares

- Students will continue their study of multiplication through an exploration of perfect squares through area models.
- Standards: 3.OA.3, 3.OA.7, 3.MD.5, 3.MD.6, 3.MD.7, 3.MD.8, 4.MD.3

Beast 3 Chapter 6: The Distributive Property

- Students will use the distributive property to split multiplication problems into parts and add the products of those parts to get the final product. Students will also focus on order of operations.
- Standards: 3.OA.4, 3.OA.5, 3.NBT.3, 3.MD.7, 5.OA.1, 5.OA.2

Beast 3 Chapter 7: Variables

- Students will use traditional variables to explain and generalized relationships and patterns in equations using a variety of operations.
- Standards: 3.OA.4, 3.OA.8, 3.OA.9, 4.OA.5, 6.EE.6

Beast 3 Chapter 8: Division

- Students will use division to split numbers into equal parts. Students will focus on the relationship between multiplication and division and will continue to practice their multiplication facts.
- Standards: 3.OA.2, 3.OA.3, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.9, 4.NBT.6

Beast 3 Chapter 9: Measurement

- Students will use units to explore meaningful measurements. Students will measure, estimate, and make basic computations and conversions.
- Standards: 2.MD.1, 2.MD.8, 3.MD.1, 3.MD.2, 3.MD.4, 3.MD.7, 3.MD.8, 4.MD.1

Beast 3 Chapter 10: Fractions

- Students will explore fractions on a number line to model fractions as numbers. Students will explore mixed numbers, parts of a whole, equivalent fractions, and comparing and ordering.
- Standards: 3.NF.1, 3.NF.2, 3.NF.3, 3.MD.4, 3.G.2, 3.G.3, 4.NF.2

Beast 3 Chapter 11: Estimation

- Students will estimate to find inexact answers, make predictions, and to determine if amounts are reasonable.
- Standards: 3.NBT.1, 3.OA.9

Beast 3 Chapter 12: Area

- Students will find the area of triangles and compound shapes. Students will learn the concepts behind traditional area formulas.
- Standards: 3.OA.3, 3.OA.8, 3.MD.5, 3.MD.6, 3.MD.7, 5.MD.1, 6.G.1

Telra Math 3.5

Beast Academy 3 is designed for students ages 9-10 and Beast Academy 4 is designed for students ages 10-12. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten and Fractions, Measurement and Data, and Geometry. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 2nd-6th Grade standards.

Beast 3 Chapter 7: Variables

- Students will use traditional variables to explain and generalized relationships and patterns in equations using a variety of operations.
- Standards: 3.OA.4, 3.OA.8, 3.OA.9, 4.OA.5, 6.EE.6

Beast 3 Chapter 8: Division

- Students will use division to split numbers into equal parts. Students will focus on the relationship between multiplication and division and will continue to practice their multiplication facts.
- Standards: 3.OA.2, 3.OA.3, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.9, 4.NBT.6

Beast 3 Chapter 9: Measurement

- Students will use units to explore meaningful measurements. Students will measure, estimate, and make basic computations and conversions.
- Standards: 2.MD.1, 2.MD.8, 3.MD.1, 3.MD.2, 3.MD.4, 3.MD.7, 3.MD.8, 4.MD.1

Beast 3 Chapter 10: Fractions

- Students will explore fractions on a number line to model fractions as numbers. Students will explore mixed numbers, parts of a whole, equivalent fractions, and comparing and ordering.
- Standards: 3.NF.1, 3.NF.2, 3.NF.3, 3.MD.4, 3.G.2, 3.G.3, 4.NF.2

Beast 3 Chapter 11: Estimation

- Students will estimate to find inexact answers, make predictions, and to determine if amounts are reasonable.
- Standards: 3.NBT.1, 3.OA.9

Beast 3 Chapter 12: Area

- Students will find the area of triangles and compound shapes. Students will learn the concepts behind traditional area formulas.
- Standards: 3.OA.3, 3.OA.8, 3.MD.5, 3.MD.6, 3.MD.7, 5.MD.1, 6.G.1

Beast 4 Chapter 1: Shapes

- Students will learn to measure angles, add new terms to their vocabularies, and be introduced to symmetry.
- Standards: 4.G.1, 4.G.2, 4.G.3, 4.MD.5, 4.MD.6, 4.MD.7, 8.G.5

Beast 4 Chapter 2: Multiplication

- Students will apply their knowledge of the distributive property to higher level multiplication with an understanding of the why behind the steps.
- Standards: 4.OA.1, 4.OA.2, 4.OA.3, 4.OA.5, 4.NBT.5, 4.MD.2, 4.MD.3, 5.NBT.5

Beast 4 Chapter 3: Exponents

- Students will explore exponents are repeated multiplication, focusing on the reasoning behind exponent rules and order of operations.
- Standards: 4.NBT.1, 6.EE.1, 8.EE.1

Beast 4 Chapter 4: Counting

- Students will explore probability and statistics through Venn diagrams, arrangements, and lists.
- Standards: Standards of Mathematical Practice

Beast 4 Chapter 5: Division

- Students will extend the division skills they learn in Beast 3 Chapter 8 to larger numbers, new strategies, and divisibility tests.
- Standards: 4.OA.1, 4.OA.3, 4.NBT.6, 4.MD.2

Beast 4 Chapter 6: Logic

- Students use logical thinking to determine what is definitely true and/or false. This chapter builds problem solving skills for students as they face types of problems with which they are unfamiliar.
- Standards: Standards of Mathematical Practice

Telra Math 4

Beast Academy 4 is designed for students ages 10-12. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten and Fractions, Measurement and Data, Geometry, and Exponents. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 4th-8th Grade standards.

Beast 4 Chapter 1: Shapes

- Students will learn to measure angles, add new terms to their vocabularies, and be introduced to symmetry.
- Standards: 4.G.1, 4.G.2, 4.G.3, 4.MD.5, 4.MD.6, 4.MD.7, 8.G.5

Beast 4 Chapter 2: Multiplication

- Students will apply their knowledge of the distributive property to higher level multiplication with an understanding of the why behind the steps.

- Standards: 4.OA.1, 4.OA.2, 4.OA.3, 4.OA.5, 4.NBT.5, 4.MD.2, 4.MD.3, 5.NBT.5

Beast 4 Chapter 3: Exponents

- Students will explore exponents are repeated multiplication, focusing on the reasoning behind exponent rules and order of operations.
- Standards: 4.NBT.1, 6.EE.1, 8.EE.1

Beast 4 Chapter 4: Counting

- Students will explore probability and statistics through Venn diagrams, arrangements, and lists.
- Standards: Standards of Mathematical Practice

Beast 4 Chapter 5: Division

- Students will extend the division skills they learn in Beast 3 Chapter 8 to larger numbers, new strategies, and divisibility tests.
- Standards: 4.OA.1, 4.OA.3, 4.NBT.6, 4.MD.2

Beast 4 Chapter 6: Logic

- Students use logical thinking to determine what is definitely true and/or false. This chapter builds problem solving skills for students as they face types of problems with which they are unfamiliar.
- Standards: Standards of Mathematical Practice

Beast 4 Chapter 7: Factors

- Students will gain an understanding of factoring and prime factorization, along with divisibility rules for multi-digit numbers.
- Standards: 4.OA.3, 4.OA.4

Beast 4 Chapter 8: Fractions (Addition and Subtraction)

- Students will add and subtraction fractions and mixed numbers with the same denominator through the use of a number line.
- Standards: 4.NF.1, 4.NF.2, 4.NF.3, 4.MD.2

Beast 4 Chapter 9: Integers

- Students will perform addition and subtraction operations using positive and negative integers with an understanding that numbers that are further left on the number line are less than numbers to the right.
- Standards: 6.NS.6, 6.NS.7, 7.NS. 1

Beast 4 Chapter 10: Fractions (Multiplication and Division)

- Students will multiply whole numbers by fractions and divide whole numbers by unit fractions while gaining an understanding of what it means to multiply for divide a fraction.
- Standards: 4.OA.2, 4.OA.3, 4.NF.1, 4.NF.2, 4.NF.4, 4.MD.2, 4.MD.3, 5.NF.3

Beast 4 Chapter 11: Decimals

- Students will understand that decimals are just another way to write fractions and that place value is especially important to understanding how decimals and fractions relate.
- Standards: 4.NF.5, 4.NF.6, 4.NF.7, 4.MD.2, 5.NBT.1, 5.NBT.4, 5.NBT.7

Beast 4 Chapter 12: Probability

- Students will apply their knowledge of counting to problems focused on probability, or how likely specific events are to happen.
- Standards: 7.SP.5, 7.SP.6, 7.SP.8

Telra Math 4.5

Beast Academy 4 is designed for students ages 10-12, and Beast Academy 5 is designed for students ages 11-13. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten and

Fractions, Measurement and Data, Geometry, and Evaluating Expressions. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 4th-8th Grade standards.

Beast 4 Chapter 6: Logic

- Students use logical thinking to determine what is definitely true and/or false. This chapter builds problem solving skills for students as they face types of problems with which they are unfamiliar.
- Standards: Standards of Mathematical Practice

Beast 4 Chapter 7: Factors

- Students will gain an understanding of factoring and prime factorization, along with divisibility rules for multi-digit numbers.
- Standards: 4.OA.3, 4.OA.4

Beast 4 Chapter 8: Fractions (Addition and Subtraction)

- Students will add and subtraction fractions and mixed numbers with the same denominator through the use of a number line.
- Standards: 4.NF.1, 4.NF.2, 4.NF.3, 4.MD.2

Beast 4 Chapter 9: Integers

- Students will perform addition and subtraction operations using positive and negative integers with an understanding that numbers that are further left on the number line are less than numbers to the right.
- Standards: 6.NS.6, 6.NS.7, 7.NS. 1

Beast 4 Chapter 10: Fractions (Multiplication and Division)

- Students will multiply whole numbers by fractions and divide whole numbers by unit fractions while gaining an understanding of what it means to multiply for divide a fraction.
- Standards: 4.OA.2, 4.OA.3, 4.NF.1, 4.NF.2, 4.NF.4, 4.MD.2, 4.MD.3, 5.NF.3

Beast 4 Chapter 11: Decimals

- Students will understand that decimals are just another way to write fractions and that place value is especially important to understanding how decimals and fractions relate.
- Standards: 4.NF.5, 4.NF.6, 4.NF.7, 4.MD.2, 5.NBT.1, 5.NBT.4, 5.NBT.7

Beast 4 Chapter 12: Probability

- Students will apply their knowledge of counting to problems focused on probability, or how likely specific events are to happen.
- Standards: 7.SP.5, 7.SP.6, 7.SP.8

Beast 5 Chapter 1: 3D Solids

- Students will explore three-dimensional solids and their surface area and volume, including a variety of polyhedrons such as prisms and pyramids.
- Standards: 5.MD.3, 5.MD.4, 5.MD.5, 5.G.3, 6.G.1, 6.G.4, 7.G.6

Beast 5 Chapter 2: Integers

- Students will perform multiplication and division operations using positive and negative integers through the discovery of why rules and patterns are true.
- Standards: 6.NS.5, 6.NS.7, 6.EE.1, 7.NS.1, 7.NS.2, 7.NS.3, 7.EE.3

Beast 5 Chapter 3: Expressions and Equations

- Students will begin the transition from arithmetic to prealgebra by becoming fluent in simplifying expressions and solving equations.
- Standards: 5.Ao.1, 6.EE.2, 6.EE.3, 6.EE.4, 6.EE.5, 6.EE.6, 6.EE.7

Beast 5 Chapter 4: Statistics

- Students will explore four basic statistical measures: average (mean), median, mode, and range. Students will apply these measures to describe sets of data.
- Standards: 5.OA.2, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5

Beast 5 Chapter 5: Factors and Multiples

- Students will apply prime factorization and the relationship between factors and multiples to greatest common factor (GCM) and least common multiple (LCM).
- Standards: 4.OA.4, 6.NS.4

Beast 5 Chapter 6: Fractions

- Students will apply everything they have learned about fractions. Students will add, subtract, multiply, and divide fractions and mixed numbers with a conceptual understanding of how each operation works with fractions.
- Standards: 5.NF.1, 5.NF.2, 5.NF.3, 5.NF.4, 5.NF.5, 5.NF.6, 6.NS.1

Telra Math 5

Beast Academy 5 is designed for students ages 11-13. Students focus on skills in Operations and Algebraic Thinking, Numbers and Operations in Base Ten and Fractions, Measurement and Data, Geometry, and Evaluating Expressions. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 4th-8th Grade standards.

Beast 5 Chapter 1: 3D Solids

- Students will explore three-dimensional solids and their surface area and volume, including a variety of polyhedrons such as prisms and pyramids.
- Standards: 5.MD.3, 5.MD.4, 5.MD.5, 5.G.3, 6.G.1, 6.G.4, 7.G.6

Beast 5 Chapter 2: Integers

- Students will perform multiplication and division operations using positive and negative integers through the discovery of why rules and patterns are true.
- Standards: 6.NS.5, 6.NS.7, 6.EE.1, 7.NS.1, 7.NS.2, 7.NS.3, 7.EE.3

Beast 5 Chapter 3: Expressions and Equations

- Students will begin the transition from arithmetic to prealgebra by becoming fluent in simplifying expressions and solving equations.
- Standards: 5.Ao.1, 6.EE.2, 6.EE.3, 6.EE.4, 6.EE.5, 6.EE.6, 6.EE.7

Beast 5 Chapter 4: Statistics

- Students will explore four basic statistical measures: average (mean), median, mode, and range. Students will apply these measures to describe sets of data.
- Standards: 5.OA.2, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5

Beast 5 Chapter 5: Factors and Multiples

- Students will apply prime factorization and the relationship between factors and multiples to greatest common factor (GCM) and least common multiple (LCM).
- Standards: 4.OA.4, 6.NS.4

Beast 5 Chapter 6: Fractions

- Students will apply everything they have learned about fractions. Students will add, subtract, multiply, and divide fractions and mixed numbers with a conceptual understanding of how each operation works with fractions.
- Standards: 5.NF.1, 5.NF.2, 5.NF.3, 5.NF.4, 5.NF.5, 5.NF.6, 6.NS.1

Beast 5 Chapter 7: Sequences

- Students will work with patterns and arithmetic sequences and describe them using algebraic expressions.
- Standards: 4.OA.5, 6.EE.2

Beast 5 Chapter 8: Ratios and Rates

- Students will work with ratios to describe a relationship between two quantities. Students will understand the relationship between ratios and fractions while noting the differences between them.
- Standards: 5.MD.1, 6.RP.1, 6.RP.2, 6.RP.3, 7.RP.1, 7.RP.2, 7.RP.3

Beast 5 Chapter 9: Decimals

- Students will multiply decimals and convert between fractions and decimals.
- Standards: 5.NBT.1, 5.NBT.2, 5.NBT.3, 5.NBT.4, 5.NBT.7, 7.NS.2

Beast 5 Chapter 10: Percents

- Students will explore the relationship between percents and ratios and understand that percents give us a standard way to write ratios for the sake of comparison.
- Standards: 6.RP.3, 7.RP.2, 7.RP.3, 7.EE.2, 7.EE.3

Beast 5 Chapter 11: Square Roots

- Students will explore square roots and gain an understanding that the square root of a number is a number that is squared to get a product.
- Standards: 6.EE.1, 8.EE.2, 8.NS.2, 8.G.6, 8.G.7, 8.G.8

Beast 5 Chapter 12: Exponents

- Students will continue their exploration of exponents and their discovery of rules that can be applied, including multiplying and dividing powers, zero, and negative exponents, raising a power to a power, and same exponents.
- Standards: 6.EE.1, 8.EE.1, 8.EE.3, 8.EE.4

Telra Math 5.5

Beast Academy 5 is designed for students ages 11-13. All Beast Academy courses are focused on problem solving and puzzle-based learning. Standards covered in this course range from 4th-8th Grade standards. Art of Problem Solving's Prealgebra course prepares students for the rigors of algebra and also teaches students problem-solving techniques to become more adept problem solvers, both in mathematics and in real-world application.

Beast 5 Chapter 7: Sequences

- Students will work with patterns and arithmetic sequences and describe them using algebraic expressions.
- Standards: 4.OA.5, 6.EE.2

Beast 5 Chapter 8: Ratios and Rates

- Students will work with ratios to describe a relationship between two quantities. Students will understand the relationship between ratios and fractions while noting the differences between them.
- Standards: 5.MD.1, 6.RP.1, 6.RP.2, 6.RP.3, 7.RP.1, 7.RP.2, 7.RP.3

Beast 5 Chapter 9: Decimals

- Students will multiply decimals and convert between fractions and decimals.
- Standards: 5.NBT.1, 5.NBT.2, 5.NBT.3, 5.NBT.4, 5.NBT.7, 7.NS.2

Beast 5 Chapter 10: Percents

- Students will explore the relationship between percents and ratios and understand that percents give us a standard way to write ratios for the sake of comparison.
- Standards: 6.RP.3, 7.RP.2, 7.RP.3, 7.EE.2, 7.EE.3

Beast 5 Chapter 11: Square Roots

- Students will explore square roots and gain an understanding that the square root of a number is a number that is squared to get a product.
- Standards: 6.EE.1, 8.EE.2, 8.NS.2, 8.G.6, 8.G.7, 8.G.8

Beast 5 Chapter 12: Exponents

- Students will continue their exploration of exponents and their discovery of rules that can be applied, including multiplying and dividing powers, zero, and negative exponents, raising a power to a power, and same exponents.
- Standards: 6.EE.1, 8.EE.1, 8.EE.3, 8.EE.4

Prealgebra Chapter 1: Properties of Arithmetic

- Students will learn rigorous definitions of arithmetic basics and apply arithmetic rules to make seemingly complicated calculations simple.

Prealgebra Chapter 2: Exponents

- Students will explore exponentiation and powers, exponent laws, zero as an exponent, and negative exponents.

Prealgebra Chapter 3: Number Theory

- Students will apply their understanding of multiples and divisibility, prime numbers, composite numbers, prime factorization, the Fundamental Theorem of Arithmetic, least common multiple (LCM), and greatest common divisor (GCD).

Prealgebra Chapter 4: Fractions

- Students will develop a rigorous definition of fractions and perform arithmetic operations with fractions and mixed numbers. Students will also compare and simplify fractions and apply their knowledge of fractions to word problems.

Prealgebra Chapter 5: Equations & Inequalities

- Students will work with expressions and equations with a focus on linear equations. Students will apply linear equations to word problems. Students will also work with inequalities, focusing on the principles of inequalities and linear inequalities.

Prealgebra Chapter 6: Decimals

- Students will define decimal notation and engage in a rigorous exploration of arithmetic with decimals. Students will work with decimal comparison and approximation, conversion between fractions and decimals, and rational numbers and their decimal representation.

Telra Math 6

Art of Problem Solving's Prealgebra course prepares students for the rigors of algebra and also teaches students problem-solving techniques to become more adept problem solvers, both in mathematics and in real-world application. The text is written to challenge students at a much deeper level than a traditional middle school prealgebra course. Students explore topics in number theory and algebra, including common divisors and multiples, primes and prime factorizations, basic equations and inequalities, ratios, geometric tools and strategies, and more.

Prealgebra Chapter 1: Properties of Arithmetic

- Students will learn rigorous definitions of arithmetic basics and apply arithmetic rules to make seemingly complicated calculations simple.

Prealgebra Chapter 2: Exponents

- Students will explore exponentiation and powers, exponent laws, zero as an exponent, and negative exponents.

Prealgebra Chapter 3: Number Theory

- Students will apply their understanding of multiples and divisibility, prime numbers, composite numbers, prime factorization, the Fundamental Theorem of Arithmetic, least common multiple (LCM), and greatest common divisor (GCD).

Prealgebra Chapter 4: Fractions

- Students will develop a rigorous definition of fractions and perform arithmetic operations with fractions and mixed numbers. Students will also compare and simplify fractions and apply their knowledge of fractions to word problems.

Prealgebra Chapter 5: Equations & Inequalities

- Students will work with expressions and equations with a focus on linear equations. Students will apply linear equations to word problems. Students will also work with inequalities, focusing on the principles of inequalities and linear inequalities.

Prealgebra Chapter 6: Decimals

- Students will define decimal notation and engage in a rigorous exploration of arithmetic with decimals. Students will work with decimal comparison and approximation, conversion between fractions and decimals, and rational numbers and their decimal representation.

Prealgebra Chapter 7: Ratios, Conversions, & Rates

- Students will define ratio and proportion and apply proportional thinking to problem solving that requires part-to-part and part-to-whole ratios. Students will explore variables in ratios and proportions and will work with unit conversion using conversion factors. Students will also explore the relationship between speed, distance, and time, along with relative speed and average speed.

Prealgebra Chapter 8: Percents

- Students will begin by defining percent and focusing on the relationships among percents, fractions, and decimals. Students will apply their understanding of percents to word problems, including percent increase and decrease problems.

Prealgebra Chapter 9: Square Roots

- Students will work with equations with square roots, including non-integer square roots, simplification of square roots, and arithmetic with square roots.

Prealgebra Chapter 10: Angles

- Students will work with angle measurement, parallel lines, angles in a triangle, and angles in other polygons.

Prealgebra Chapter 11: Perimeter & Area

- Students will explore segments and perimeter. Students will also work with triangle inequality and triangle area. Then, students will explore the circumference and area of a circle, concluding with a student of unusual areas.

Prealgebra Chapter 12: Right Triangles & Quadrilaterals

- Students will use the Pythagorean Theorem and explore Pythagorean triples, along with specific types of right triangles. Students will then dive into the types of quadrilaterals and their attributes, along with quadrilateral area.

Telra Math 6.5

Art of Problem Solving's Prealgebra and Algebra prepare students for the rigors of algebra and also teaches students problem-solving techniques to become more adept problem solvers, both in mathematics and in real-world application. The text is written to challenge students at a much deeper level than a traditional prealgebra or algebra course.

Prealgebra Chapter 7: Ratios, Conversions, & Rates

- Students will define ratio and proportion and apply proportional thinking to problem solving that requires part-to-part and part-to-whole ratios. Students will explore variables in ratios and proportions and will work with unit conversion using conversion factors. Students will also explore the relationship between speed, distance, and time, along with relative speed and average speed.

Prealgebra Chapter 8: Percents

- Students will begin by defining percent and focusing on the relationships among percents, fractions, and decimals. Students will apply their understanding of percents to word problems, including percent increase and decrease problems.

Prealgebra Chapter 9: Square Roots

- Students will work with equations with square roots, including non-integer square roots, simplification of square roots, and arithmetic with square roots.

Prealgebra Chapter 10: Angles

- Students will work with angle measurement, parallel lines, angles in a triangle, and angles in other polygons.

Prealgebra Chapter 11: Perimeter & Area

- Students will explore segments and perimeter. Students will also work with triangle inequality and triangle area. Then, students will explore the circumference and area of a circle, concluding with a student of unusual areas.

Prealgebra Chapter 12: Right Triangles & Quadrilaterals

- Students will use the Pythagorean Theorem and explore Pythagorean triples, along with specific types of right triangles. Students will then dive into the types of quadrilaterals and their attributes, along with quadrilateral area.

Algebra Chapter 1: Follow the Rules

- Students will review the rules and properties of arithmetic and apply those rules to equations. Students will also review exponents, fractional exponents, and radicals.

Algebra Chapter 2: x Marks the Spot

- Students will work with expressions with and without fractions with a focus on distribution, subtraction, and factoring.

Algebra Chapter 3: One-Variable Linear Equations

- Students will be introduced to linear equations beginning with one variable. Students will apply what they learn to solving word problems involving one-variable linear equations.

Algebra Chapter 4: More Variables

- Students begin to work with multiple variables by evaluating expressions through distribution and factoring.

Algebra Chapter 5: Multi-Variable Linear Equations

- Students will be introduced to multi-variable linear equations and will use substitution and elimination. Students will apply their learning to word problems and explore linear equations in disguise.

Algebra Chapter 6: Ratios and Percents

- Students will work with ratios, conversion factors, and percents and will understand the relationship between ratios and percents. Students will also work with percentage problems to apply their learning.

Algebra Chapter 7: Proportion

- Students will explore direct, inverse, and joint proportion and will apply their learning to rate problems.

Algebra Chapter 8: Graphing Lines

- Students will explore number lines and the Cartesian Plane to graph linear equations. Students will become familiar with slope, intercepts, and equations and will be able to compare lines.

Algebra Chapter 9: Introduction to Inequalities

- Students will work with linear inequalities and will graph inequalities. Students will also complete optimization problems in which they find the minimum or maximum possible value of a quantity.

Algebra Chapter 10: Quadratic Equations – Part 1

- Students will factor quadratic equations and work with the sums and products of roots of a quadratic.

Algebra Chapter 11: Special Factorizations

- Students will work with special factorizations, including difference of squares, squares of binomials, and sums and differences of cubes.

Algebra Chapter 12: Complex Numbers

- Students will be introduced to complex numbers and imaginary numbers. Students will complete arithmetic problems involving complex numbers.

Algebra Chapter 13: Quadratic Equations – Part 2

- Students will continue their study of quadratic equations with completing the square and the quadratic formula.

Telra Math 7

Art of Problem Solving's Introduction to Algebra course is a thorough introduction for students in grades 6-9 to algebra topics such as linear equations, ratios, quadratic equations, special factorizations, complex numbers, graphing linear and quadratic equations, linear and quadratic inequalities, functions, polynomials, exponents and logarithms, absolute value, sequences and series, and more! The text is written to challenge students at a much deeper level than a traditional algebra course.

Algebra Chapter 1: Follow the Rules

- Students will review the rules and properties of arithmetic and apply those rules to equations. Students will also review exponents, fractional exponents, and radicals.

Algebra Chapter 2: x Marks the Spot

- Students will work with expressions with and without fractions with a focus on distribution, subtraction, and factoring.

Algebra Chapter 3: One-Variable Linear Equations

- Students will be introduced to linear equations beginning with one variable. Students will apply what they learn to solving word problems involving one-variable linear equations.

Algebra Chapter 4: More Variables

- Students begin to work with multiple variables by evaluating expressions through distribution and factoring.

Algebra Chapter 5: Multi-Variable Linear Equations

- Students will be introduced to multi-variable linear equations and will use substitution and elimination. Students will apply their learning to word problems and explore linear equations in disguise.

Algebra Chapter 6: Ratios and Percents

- Students will work with ratios, conversion factors, and percents and will understand the relationship between ratios and percents. Students will also work with percentage problems to apply their learning.

Algebra Chapter 7: Proportion

- Students will explore direct, inverse, and joint proportion and will apply their learning to rate problems.

Algebra Chapter 8: Graphing Lines

- Students will explore number lines and the Cartesian Plane to graph linear equations. Students will become familiar with slope, intercepts, and equations and will be able to compare lines.

Algebra Chapter 9: Introduction to Inequalities

- Students will work with linear inequalities and will graph inequalities. Students will also complete optimization problems in which they find the minimum or maximum possible value of a quantity.

Algebra Chapter 10: Quadratic Equations – Part 1

- Students will factor quadratic equations and work with the sums and products of roots of a quadratic.

Algebra Chapter 11: Special Factorizations

- Students will work with special factorizations, including difference of squares, squares of binomials, and sums and differences of cubes.

Algebra Chapter 12: Complex Numbers

- Students will be introduced to complex numbers and imaginary numbers. Students will complete arithmetic problems involving complex numbers.

Algebra Chapter 13: Quadratic Equations – Part 2

- Students will continue their study of quadratic equations with completing the square and the quadratic formula.

Algebra Chapter 14: Graphing Quadratics

- Students will graph quadratic equations, including parabolas and circles.

Algebra Chapter 15: More Inequalities

- Students will continue their study of inequalities by applying their understanding to quadratics and moving beyond quadratics. Students will also explore the Trivial Inequality.

Algebra Chapter 16: Functions

- Students will be introduced to functions and will combine functions, find inverse functions, and explore problem solving with functions.

Algebra Chapter 17: Graphing Functions

- Students will begin with the basics of graphing functions, after which they will explore transformations and graphing inverse functions.

Algebra Chapter 18: Polynomials

- Students will work with polynomials using addition, subtraction, and multiplication.

Algebra Chapter 19: Exponents and Logarithms

- Students will explore exponential functions and interest, then move into defining and applying logarithms.

Algebra Chapter 20: Special Functions

- Students will work with radicals, absolute value, floor and ceiling, and rational functions.

Algebra Chapter 21: Sequences and Series

- Students will explore arithmetic sequences and series, geometric sequences and series, and telescoping.

Algebra Chapter 22: Special Manipulations

- Students will raise equations to powers and explore the concepts of self-similarity and symmetry.

Telra Math 7.5

Art of Problem Solving's Introduction to Algebra course is a thorough introduction for students in grades 6-9 to algebra topics such as linear equations, ratios, quadratic equations, special factorizations, complex numbers, graphing linear and quadratic equations, linear and quadratic inequalities, functions, polynomials, exponents and logarithms, absolute value, sequences and series, and more! The text is written to challenge students at a much deeper level than a traditional algebra course.

Algebra Chapter 14: Graphing Quadratics

- Students will graph quadratic equations, including parabolas and circles.

Algebra Chapter 15: More Inequalities

- Students will continue their study of inequalities by applying their understanding to quadratics and moving beyond quadratics. Students will also explore the Trivial Inequality.

Algebra Chapter 16: Functions

- Students will be introduced to functions and will combine functions, find inverse functions, and explore problem solving with functions.

Algebra Chapter 17: Graphing Functions

- Students will begin with the basics of graphing functions, after which they will explore transformations and graphing inverse functions.

Algebra Chapter 18: Polynomials

- Students will work with polynomials using addition, subtraction, and multiplication.

Algebra Chapter 19: Exponents and Logarithms

- Students will explore exponential functions and interest, then move into defining and applying logarithms.

Algebra Chapter 20: Special Functions

- Students will work with radicals, absolute value, floor and ceiling, and rational functions.

Algebra Chapter 21: Sequences and Series

- Students will explore arithmetic sequences and series, geometric sequences and series, and telescoping.

Algebra Chapter 22: Special Manipulations

- Students will raise equations to powers and explore the concepts of self-similarity and symmetry.

Geometry Chapter 1: What's in a Name?

- Students will develop an understanding of the vocabulary of geometry, beginning with points, lines, and planes. Students will begin to explore the idea of proof and how it relates to geometric concepts.

Geometry Chapter 2: Angles

- Students will measure angles, distinguish between straight and vertical angles, explore parallel lines, and determine angles in a triangle.

Geometry Chapter 3: Congruent Triangles

- Students will explore the different types of congruence as it relates to sides and angles in triangles. Students will also learn about isosceles and equilateral triangles and how the perpendicular bisector relates to equilateral triangles.

Geometry Chapter 4: Perimeter and Area

- Students will find the perimeter and area of a variety of shapes and will work with shapes that have the same base and same altitude.

Geometry Chapter 5: Similar Triangles

- Students will define similarity and learn about three types of similarity (AA, SAS, and SSS). Students will also use similarity to solve problems and will construct angles and parallels.

Geometry Chapter 6: Right Triangles

- Students will apply the Pythagorean Theorem to right triangles and will learn about two special types of right triangles. Students will also apply congruence and similarity to right triangles and will learn Heron's formula.

Geometry Chapter 7: Special Parts of a Triangle

- Students will discover special parts of a triangle, including bisectors, perpendicular bisectors, angle bisectors, medians, and altitudes. Students will apply their knowledge of these special parts to challenging problems and to the construction of bisectors.

Geometry Chapter 8: Quadrilaterals

- Students will review quadrilateral basics, then focus in on trapezoids, parallelograms, rhombi, rectangles, and squares. Students will explore the idea of if and only if as applied to quadrilaterals and will apply their learning to a variety of problems.

Geometry Chapter 9: Polygons

- Students will be introduced to polygons and spend time working with angles in a polygon. Students will find the area of polygons and will work to construct regular polygons.

Geometry Chapter 10: Geometric Inequalities

- Students work with the Triangle Inequality and will learn about the sides and angles of a triangle.

Geometry Chapter 11: Circles

- Students will learn to calculate arc measure, arc length, and circumference of circles, along with how to find the area of a circle.

Geometry Chapter 12: Circles and Angles

- Students will discover inscribed angles along with angles inside and outside circles. Students will also be introduced to tangents and learn to construct them.

Geometry Chapter 13: Power of a Point

- Students will learn what power of a point is and apply their learning to a variety of types of problems.

Geometry Chapter 14: Three-Dimensional Geometry

- Students will work in a variety of planes with prisms, pyramids, and regular polyhedral.

Telra Math 8

This course prepares students to tackle Math 2 content. Geometry is a challenging geometry course for students aimed at students in grades 7-10, including topics such as similar triangles, congruent triangles, quadrilaterals, polygons, circles, funky areas, power of a point, three-dimensional geometry, transformations, and introductory trigonometry. These texts are written to challenge students at a much deeper level than traditional courses for the grade levels.

Geometry Chapter 1: What's in a Name?

- Students will develop an understanding of the vocabulary of geometry, beginning with points, lines, and planes. Students will begin to explore the idea of proof and how it relates to geometric concepts.

Geometry Chapter 2: Angles

- Students will measure angles, distinguish between straight and vertical angles, explore parallel lines, and determine angles in a triangle.

Geometry Chapter 3: Congruent Triangles

- Students will explore the different types of congruence as it relates to sides and angles in triangles. Students will also learn about isosceles and equilateral triangles and how the perpendicular bisector relates to equilateral triangles.

Geometry Chapter 4: Perimeter and Area

- Students will find the perimeter and area of a variety of shapes and will work with shapes that have the same base and same altitude.

Geometry Chapter 5: Similar Triangles

- Students will define similarity and learn about three types of similarity (AA, SAS, and SSS). Students will also use similarity to solve problems and will construct angles and parallels.

Geometry Chapter 6: Right Triangles

- Students will apply the Pythagorean Theorem to right triangles and will learn about two special types of right triangles. Students will also apply congruence and similarity to right triangles and will learn Heron's formula.

Geometry Chapter 7: Special Parts of a Triangle

- Students will discover special parts of a triangle, including bisectors, perpendicular bisectors, angle bisectors, medians, and altitudes. Students will apply their knowledge of these special parts to challenging problems and to the construction of bisectors.

Geometry Chapter 8: Quadrilaterals

- Students will review quadrilateral basics, then focus in on trapezoids, parallelograms, rhombi, rectangles, and squares. Students will explore the idea of if and only if as applied to quadrilaterals and will apply their learning to a variety of problems.

Geometry Chapter 9: Polygons

- Students will be introduced to polygons and spend time working with angles in a polygon. Students will find the area of polygons and will work to construct regular polygons.

Geometry Chapter 10: Geometric Inequalities

- Students work with the Triangle Inequality and will learn about the sides and angles of a triangle.

Geometry Chapter 11: Circles

- Students will learn to calculate arc measure, arc length, and circumference of circles, along with how to find the area of a circle.

Geometry Chapter 12: Circles and Angles

- Students will discover inscribed angles along with angles inside and outside circles. Students will also be introduced to tangents and learn to construct them.

Geometry Chapter 13: Power of a Point

- Students will learn what power of a point is and apply their learning to a variety of types of problems.

Geometry Chapter 14: Three-Dimensional Geometry

- Students will work in a variety of planes with prisms, pyramids, and regular polyhedral.

Geometry Chapter 15: Curved Surfaces

- Students will learn to work with cylinders, cones, and spheres, applying their geometric knowledge of circles to the three-dimensional world.

Geometry Chapter 16: The More Things Change

- Students will complete translations, rotations, reflections, and dilation. Students will construct transformations.

Geometry Chapter 17: Analytic Geometry

- Students will study lines, circles, and applications in analytic geometry. Students will also work with proofs as they apply to analytic geometry and will calculate the distance between a point and a line.

Geometry Chapter 18: Introduction to Trigonometry

- Students will gain a basic understanding of trigonometry and how trigonometry relates to right triangles. Students will also focus on how trigonometry can be applied outside of right triangles and will learn the Law of Sines and Law of Cosines.

Geometry Chapter 19: Problem Solving Strategies in Geometry

- Students will focus on using proofs in a variety of geometry-based problems.

Telra Math 8B/C

Telra Math 8B/C covers both Counting & Probability and Number Theory. Counting & Probability (C&P) is a thorough introduction aimed at students in grades 7-10 to counting and probability topics such as permutations, combinations, Pascal's triangle, geometric probability, basic combinatorial identities, and the Binomial Theorem. This is an elective math course and may not be offered every school year.

C&P Chapter 1: Counting is Arithmetic

- Students will use their knowledge of counting with lists of numbers and move to incorporating addition and subtraction and multiple events. Students will also explore how counting relates to permutations.

C&P Chapter 2: Basic Counting Techniques

- Students will learn a variety of counting techniques that they will use as they apply their skills to different types of problems, including casework, complementary counting, constructive counting, and counting with restrictions.

C&P Chapter 3: Correcting for Overcounting

- Students will explore permutations with repeated elements, counting pairs of items, and counting with symmetries to correct for overcounting.

C&P Chapter 4: Committees and Combinations

- Students will practice committee forming and learn to compute combinations. Students will then be introduced to their first combinatorial identity.

C&P Chapter 5: More with Combinations

- Students will apply their knowledge to more combinations, including paths on a grid, committee-type problems, and distinguishability.

C&P Chapter 6: Some Harder Counting Problems

- Students will use their problem solving knowledge to work through more challenging counting problems to wrap on their study of counting.

C&P Chapter 7: Introduction to Probability

- Students will explore basic probability, equally likely outcomes, and the application of counting techniques in probability problems.

C&P Chapter 8: Basic Probability Techniques

- Students will explore how addition and multiplication factor into probability through complementary probability and probability with dependent events.

C&P Chapter 9: Think About It!

- Students will apply what they have learned so far about probability to challenging problems.

C&P Chapter 10: Geometric Probability

- Students will explore problems using length and area with probability.

C&P Chapter 11: Expected Value

- Students will define expected value and apply expected value to a variety of problems.

C&P Chapter 12: Pascal's Triangle

- Students will learn to construct Pascal's Triangle and explore more combinatorial identities.

C&P Chapter 13: The Hockey Stick Identity

- Students will be introduced to the Hockey Stick Identity and will explore both a step-by-step solution and an alternate solution.

C&P Chapter 14: The Binomial Theorem

- Students will learn the binomial theorem, applications of the theorem, and how to use the theorem in identities.

C&P Chapter 15: More Challenging Problems

- Students will apply what they have learned so far about probability to challenging problems.

NT Chapter 1: Integers

- Students will name types of integers and will review relationships between integers, their multiples, and their divisors.

NT Chapter 2: Primes and Composites

- Students will work with prime and composite numbers, including identifying examples of each and solving problems involving both.

NT Chapter 3: Multiples and Divisors

- Students will continue to explore the many relationships between integers, their multiples, and their divisors.

NT Chapter 4: Prime Factorization

- Students will explore the ways prime factorization helps make problems such as finding common multiples and common divisors of groups of integers much easier—particularly when large integers are involved. Knowing how to work with large integers significantly increases the range of problems students can solve.

NT Chapter 5: Divisor Problems

- Students will discuss a method (and develop a formula) for counting the number of positive divisors of an integer. Students will then use this method flexibly to count divisors that possess certain properties (multiples of 2, squares, cubes, etc.) and solve other problems.

NT Chapter 6: Special Numbers

- Students will explore several interesting types of numbers and their number theoretic properties

NT Chapter 7: Algebra with Integers

- While different areas of mathematics can be very useful on their own, they are far more powerful (and more interesting!) when used together. Students will take the material covered in the first few chapters and apply it to problems that test their understanding of both number theory and algebra.

NT Chapter 8: Base Numbers

- This chapter revolves around different methods for writing numbers with an exploration of the use of different numbers of digits.

NT Chapter 9: Base Number Arithmetic

- Students will perform arithmetic operations on base numbers.

NT Chapter 10: Units Digits

- Students will explore the ways in which units digits behave within arithmetic. After exploring units digits in the decimal number system, students explore the ways in which units digits behave in other number base systems. Once familiar and comfortable with all of the lessons in this chapter, students will be ready to explore a much deeper realm of number theory using a tool known as modular arithmetic.

NT Chapter 11: Decimals and Fractions

- Students will explore important and useful relationships between decimals and fractions. Not only do the methods discussed help us convert between decimals and fractions, a highly useful

skill on its own, but they also build an understanding of numbers in a way that helps students solve different types of problems.

NT Chapter 12: Introduction to Modular Arithmetic

- Students will explore the area of number theory known as modular arithmetic.

NT Chapter 13: Divisibility Rules

- Students explore divisibility rules—rules that help us determine when any given integer is divisible by particular positive integers.

NT Chapter 14: Linear Congruences

- Students will explore both how to determine when linear congruences have solutions and how to find any solutions they have.

NT Chapter 15: Number Sense

- Students will focus entirely on problem solving techniques. Just as importantly, they will explore methods that help us use our familiarity with numbers to solve problems more efficiently. This useful familiarity is referred to as number sense.

Telra Math 9

Art of Problem Solving's Intermediate Algebra is a comprehensive textbook covering Algebra 2 and topics in Precalculus. This book is the follow-up to the acclaimed Introduction to Algebra textbook. In addition to offering standard Algebra 2 and Precalculus curriculum, the text includes advanced topics

Intermediate Algebra Chapter 1: Basic Techniques for Solving Equations

- Students will use basic techniques for solving equations, starting with isolation, substitution, and elimination methods. It also covers solving larger systems of linear equations and concludes with a summary of the key concepts discussed.

Intermediate Algebra Chapter 2: Functions Review

- Students will understand the fundamental concepts of functions, including their basics, graphing techniques, composition, and inverse functions. Students will apply key principles in function analysis and manipulation.

Intermediate Algebra Chapter 3: Complex Numbers

- Students will explore the arithmetic of complex numbers, the complex plane, and real and imaginary parts. Students will then graph in the complex plane.

Intermediate Algebra Chapter 4: Quadratics

- Students will factor quadratics, relate roots and coefficients, and complete the square. Students will then examine the discriminant and quadratic inequalities.

Intermediate Algebra Chapter 5: Conics

- Students will learn definitions of the conic sections, and the important points, lines, and segments associated with each type of conic section. Students will use these definitions to create general formulas that can be used to solve specific problems, and students will also learn how to use definitions to tackle some problems without resorting to formulas.

Intermediate Algebra Chapter 6: Polynomial Division

- Students will review polynomial addition, multiplication, and evaluation prior to moving into polynomial division, including synthetic division and the Remainder Theorem.

Intermediate Algebra Chapter 7: Polynomial Roots Part I

- Students will use the factor theorem and will work with integer roots and rational roots. Students will also explore graphing and the Fundamental Theorem of Algebra.

Intermediate Algebra Chapter 8: Polynomial Roots Part II

- Students will continue to work with polynomial roots moving into higher level content.

Intermediate Algebra Chapter 9: Factoring Multivariable Polynomials

- Students will work with irrational roots and nonreal roots and use roots to make equations.

Intermediate Algebra Chapter 10: Sequences and Series Equations – Part 1

- Students will learn the Factor Theorem for Multivariable Polynomials and work with sums and difference of powers.

Intermediate Algebra Chapter 11: Identities, Manipulations, and Induction

- Students will explore various mathematical techniques and principles, including identities, manipulations, and induction. Students will cover methods such as brute force, ratios, mathematical induction, and the binomial theorem to solve problems and prove statements.

Intermediate Algebra Chapter 12: Inequalities

- Students will delve into the topic of inequalities, detailing methods to manipulate them and prove their validity. Students will work with specific inequalities, such as the trivial inequality, the AM-GM inequality for both two and more variables, the Cauchy-Schwarz inequality, and techniques for finding maxima and minima.

Intermediate Algebra Chapter 13: Exponents and Logarithms

- Students will focus on exponents and logarithms, starting with the basics of exponential functions and an introduction to logarithms. They will discuss logarithmic identities, how to use them, the relationship between logs and exponents, and covers natural logarithms and exponential decay.

Intermediate Algebra Chapter 14: Radicals

- Students will focus on radicals, starting with raising radicals to powers and moving to evaluating expressions involving radicals. The chapter also covers radical conjugates and concludes with a summary of key concepts.

Intermediate Algebra Chapter 15: Special Classes of Functions

- Students will explore special classes of functions, beginning with rational functions and their graphs, followed by rational function equations and inequalities. It also covers even and odd functions, monotonic functions, and concludes with a summary of the key concepts.

Intermediate Algebra Chapter 16: Piecewise Defined Functions

- Students will delve into piecewise defined functions, starting with an introduction to the concept and progressing to absolute value and graphing absolute value functions. It also explores the floor and ceiling functions, including problem-solving with the floor function, and concludes with a summary of the chapter's key concepts.

Intermediate Algebra Chapter 17: More Sequences and Series

- Students will continue the exploration of sequences and series, covering topics such as the algebra of recursive sequences, telescoping, and sums of polynomial series. It also discusses arithmetico-geometric series and finite differences, concluding with a summary of the chapter's key concepts.

Intermediate Algebra Chapter 18: More Inequalities

- Students will focus on advanced inequalities, covering the mean inequality chain, the rearrangement inequality, and addressing situations where standard formulas fail. The chapter concludes with a summary of the key concepts discussed.

Intermediate Algebra Chapter 19: Functional Equations

- Students will explore functional equations, beginning with techniques for finding values and functions through substitution. It also covers separation methods and cyclic functions, and concludes with a summary of the key concepts.

Intermediate Algebra Chapter 20: Some Advanced Strategies

- Students will work with advanced mathematical strategies, including concepts of symmetry and substitution for simplification. The chapter also explores the method of undetermined coefficients, constructing polynomials from roots, common divisors of polynomials, and revisits symmetric sums, concluding with a summary of the key ideas.

Telra Math 10

Art of Problem Solving's Precalculus textbook offers a rigorous and comprehensive introduction to advanced algebra, trigonometry, and elementary analysis, preparing students for calculus and mathematical competitions. With an emphasis on problem-solving strategies and deep conceptual understanding, the book features challenging problems and detailed explanations.

Precalculus Chapter 1: Functions Review

- In this chapter, students will review the foundational concepts of functions, including definitions, domain and range, and operations like composition and inversion. They will build a solid base for further study by reinforcing graphing techniques and exploring how functions interact.

Precalculus Chapter 2: Introduction to Trigonometric Functions

- Students will be introduced to trigonometric functions via the unit circle, radian measure, and their graphical representations. The chapter also examines how transformations and inverse trig functions affect graphs and function behavior.

Precalculus Chapter 3: Trigonometric Identities

- This chapter explores fundamental trig identities and how to manipulate them, including sum, difference, double-angle, and half-angle formulas. Emphasis is placed on applying these identities to simplify expressions and solve problems.

Precalculus Chapter 4: Applications to Geometry

- Trigonometry is applied to geometric contexts such as right and oblique triangles, using tools like the Law of Sines and Law of Cosines. The chapter deepens understanding of triangle relationships and area formulas.

Precalculus Chapter 5: Parameterization and Trigonometric Coordinate Systems

- This chapter introduces parameterized curves and polar coordinates, allowing students to describe curves and motion more flexibly. It concludes with an introduction to three-dimensional coordinate systems.

Precalculus Chapter 6: Basics of Complex Numbers

- Students will learn to perform arithmetic with complex numbers, visualize them on the complex plane, and analyze their components. The chapter also explores how complex numbers relate to polynomial roots.

Precalculus Chapter 7: Trigonometry and Complex Numbers

- Complex numbers are expressed in polar and exponential forms, highlighting the elegance of Euler's formula. The chapter introduces roots of unity and their symmetrical properties in problem-solving.

Precalculus Chapter 8: Geometry of Complex Numbers

- Students will explore how complex numbers can be used to represent geometric objects and transformations in the plane, including rotations, reflections, translations, distances, and relationships between lines. They will apply these ideas to analyze regular polygons and prove classic geometric theorems using the powerful algebraic tools of complex numbers.

Calculus Chapter 1: Sets and Functions

- Students will build the foundational language of calculus by studying sets, functions, graphs, trigonometric functions, and exponential and logarithmic relationships. They will learn how to describe mathematical objects precisely and analyze how different types of functions behave and relate to one another.

Calculus Chapter 2: Limits and Continuity

- Students will develop the concept of a limit to describe how functions behave as inputs approach a value and use this idea to define continuity. They will learn to evaluate limits, identify discontinuities, and understand why continuity is essential for calculus.

Calculus Chapter 3: The Derivative

- Students will discover the derivative as a measure of instantaneous rate of change and slope, beginning with intuitive ideas and progressing to formal definitions and computation techniques. They will learn differentiation rules, including the Chain Rule and implicit differentiation, and explore important theoretical results such as the Mean Value Theorem.

Calculus Chapter 4: Applications of the Derivative

- Students will apply derivatives to solve real-world and mathematical problems involving rates of change, optimization, motion, and approximation. They will use derivatives to analyze graphs, find maximum and minimum values, estimate solutions with Newton's Method, and solve related rates problems.

Calculus Chapter 5: Integration

- Students will develop integration as a tool for measuring accumulation and area and learn how it is connected to differentiation through the Fundamental Theorem of Calculus. They will master a variety of integration techniques and apply definite integrals to calculate areas, volumes, arc lengths, average values, and numerical approximations.

Calculus Chapter 6: Infinity

- Students will extend their understanding of limits and integration to situations involving infinite behavior and unbounded functions. They will evaluate limits at infinity, work with indeterminate forms using L'Hôpital's Rule, and determine whether improper integrals converge or diverge.

Calculus Chapter 7: Series

- Students investigate infinite sequences and series to understand how infinitely many terms can combine to produce finite results. They learn convergence tests, alternating series, Taylor

polynomials, and Taylor series, using these tools to approximate functions and model complex mathematical behavior.

Telra Math 11

This course expands students' understanding of advanced mathematics by exploring calculus topics such as parametric and polar curves, differential equations, and numerical approximation methods. Students will also develop a strong foundation in linear algebra and vector geometry, studying vectors, matrices, determinants, transformations, and geometric relationships in both two- and three-dimensional space. Through these topics, students will strengthen their problem-solving skills and learn powerful mathematical tools used in higher-level mathematics, science, engineering, and computer science.

Calculus Chapter 8: Plane Curves

- Students will investigate curves represented by parametric equations and polar coordinates, expanding their understanding of graphing beyond the traditional Cartesian plane. They will analyze the properties of these curves and learn techniques for calculating areas enclosed by polar graphs.

Calculus Chapter 9: Differential Equations

- Students will be introduced to differential equations as mathematical models that describe changing quantities and explore methods for solving basic and second-order linear differential equations. They will also use Euler's Method to approximate solutions and better understand the behavior of differential equations when exact solutions are not readily available.

Precalculus Chapter 9 Vectors in Two-Dimensions

- Students will learn how vectors can be used to represent quantities with both magnitude and direction and will explore operations involving vectors, including the dot product. They will apply vectors to analyze lines, investigate linear dependence, and use projections to better understand geometric and algebraic relationships.

Precalculus Chapter 10: Matrices in Two Dimensions

- Students will be introduced to matrices as tools for organizing information and performing transformations in the coordinate plane. They will learn how to multiply and invert matrices, interpret determinants algebraically and geometrically, and use matrices to model and analyze geometric transformations.

Precalculus Chapter 11: Vectors and Matrices in Three Dimensions, Part 1

- Students will extend their understanding of vectors and matrices from two dimensions to three dimensions, learning how to represent and analyze points, directions, and transformations in space. They will work with 3×3 matrices, calculate determinants, and explore matrix concepts that apply to systems of any size.

Precalculus Chapter 12: Vectors and Matrices in Three Dimensions, Part 2

- Students will use vectors and matrices to study lines and planes in three-dimensional space and investigate how these objects interact. They will learn about the cross product, interpret determinants geometrically, and develop methods for finding the inverses of 3×3 matrices.

Precalculus Chapter 13: Vector Geometry

- Students will apply vector methods to solve geometric problems, with a particular focus on triangles and other geometric figures. They will also explore connections between vectors and complex numbers while developing strategies for tackling challenging mathematical problems using multiple representations.

Social Studies

Curriculum sources

Core Knowledge

Core Knowledge History and Geography covers topics in world history, American history, and geography while integrating topics in civics and the arts. Students will build knowledge of diverse civilizations, cultures, and concepts. Core Knowledge History and Geography seeks to build and deepen students' knowledge grade by grade and allows students to make cross-curricular connections. The texts students will read during these courses are content-rich nonfiction that work to build students' knowledge over the course of time. This curriculum serves as the core social studies curriculum at Telra Institute.

Engage NY

Engage NY follows the Inquiry Design Model, which focuses on inquiry-based teaching and learning. Units from Engage NY allow students to make discoveries about civics and economics through discussion and tasks designed to help students think through various problems.

OpenStax

The American History and World History courses at Telra Institute utilize the OpenStax high school history curriculum as a foundation while maintaining the school's commitment to rigorous, college-preparatory academics. These courses emphasize the development of historical thinking skills through the study of primary and secondary sources, analysis of historical evidence, evaluation of competing interpretations, and construction of evidence-based arguments.

The Modern States

Modern States' History and Social Science curriculum offers college-level courses in subjects such as U.S. History, Western Civilization, American Government, and Economics. Designed to prepare students for CLEP exams, these courses provide rigorous, content-rich instruction through video lectures, primary source readings, and practice assessments. The curriculum emphasizes critical thinking, historical analysis, and civic understanding. By engaging with diverse historical perspectives and foundational social science concepts, students build deep knowledge aligned with college standards. This curriculum supports Telra Institute's advanced social studies programming.

College-level Social Sciences

Additional social science courses in 9th grade & beyond at Telra are taught by college faculty using a variety of college textbooks in fields such as Economics, Political Science, and History. Refer to the Central Piedmont Community College course catalog for further details.

Course sequence

Students follow a largely grade-level based progression through social science courses until high school. Students who demonstrate a need for instruction below the minimum level for their numerical grade level will be referred for intervention and may be retained.

Grade Level Course

Kindergarten			
Civics and Economics • Rules • Wants and Needs • Civic Ideals	Geography and Skills • Let's Explore Our World	American History • Native Americans • Exploring and Moving to America • Mount Rushmore Presidents	World History • Mesopotamia
1st Grade			
Civics and Economics • Economic Choices • The President • Lessons in Civics	Geography and Skills • Continents, Countries, and Maps	American History • Early Civilizations of the Americas • Early Explorers and Settlers • From Colonies to Independence	World History • Three World Religions • Culture of Mexico • Ancient Egypt
2nd Grade			
Civics and Economics • Civic Ideals and Practices • Economics	Geography and Skills • Geography of the Americas	American History • Making the Constitution • War of 1812 • Americans Move West • Civil War • Civil Rights Leaders	World History • Ancient Greece • Ancient China • Ancient India • Culture of Japan
3rd Grade			

Civics and Economics - Cultural Diversity - Leadership and Government - Global Trade	Geography and Skills - World Rivers - Canada	American History - Earliest Americans - Exploration of North America - Immigration and Citizenship	World History - Vikings - Ancient Rome
4th Grade			
Civics and Economics Declaration of Independence	Geography and Skills - Using Maps - World Mountains	American History - The American Revolution - US Constitution - Early Presidents - American Reformers	World History - Medieval Europe - Medieval Islamic Empires - Early and Medieval African Kingdoms - Dynasties of China
5th Grade			
Civics and Economics Complex Societies	Geography and Skills - World Lakes - Geography of the United States - World Deserts	American History - Maya, Aztec, and Inca Civilizations - The Civil War - Westward Expansion – Before and After the Civil War - Native Americans – Cultures and Conflicts - Immigration	World History - Age of Exploration - The Renaissance - The Reformation - England’s Golden Age - Early Russia - Feudal Japan - Independence for Latin America
6th Grade			
Civics and Economics - Financial Fitness for Life - Wide World of Trade	American History Industrial Revolution: Changes and Challenges	World History Ancient Greece and Rome	

	- Industrialization and Urbanization in America - Reform in the Industrial Revolution	- The Enlightenment - French Revolution and Romanticism
World History (typically taken in 7 th grade; eligible for high school credit)		
World History OpenStax		
American History (typically taken in 8 th grade; eligible for high school credit)		
American History - OpenStax - Modern States		
High School		
- Modern States – American Government – eligible for high school and/or college credit - Various college level social science courses		

Course information

Kindergarten

Social Studies in Kindergarten includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Rules

- This inquiry engages kindergartners in exploring the various ways people interact with and act upon rules and laws in society. The compelling question “Are all rules good rules?” assumes that while students generally enter school with some concept of rules and what it means to follow or break them, they may not yet understand who makes rules and how they change.

Engage NY: Needs and Wants

- This inquiry focuses on the economics concept of scarcity by developing an understanding of needs and wants and goods and services through the compelling question, “Can we get everything we need and want?”

Engage NY

- This inquiry is an exploration into the concept of responsibility, beginning within the home and then expanding to school and the community. In examining the idea that we all have important responsibilities, students should consider the question of what could happen if they choose to act irresponsibly. Students build their knowledge and understanding such that they should be able to develop an argument that answers the compelling question “Why do I have to be responsible?”

Geography and Skills

Core Knowledge: Let's Explore Our World

- This unit provides a broad overview of our planet, and many of the ways we can explore it. Students begin with their own physical location in this world, and expand from their neighborhood to their city, and eventually to the continent on which they live through a study of maps and how to use them.

American History

Core Knowledge: Native Americans

- In this unit, students learn about early Native Americans through the eyes of three representative children from the past, who lived in three different North American cultural regions.

Core Knowledge: Exploring and Moving to America

- This unit delves into the sweeping story of America, including the voyages of Columbus, the settlement of the Pilgrims, the struggle for independence, and the sorrowful history of slavery through a gentle introduction to the treatment of indigenous peoples and enslaved people on American soil.

Core Knowledge: Mount Rushmore Presidents

- This unit introduces students to four U.S. presidents honored on Mount Rushmore. Students discover how the faces of these leaders—George Washington, Thomas Jefferson, Abraham Lincoln, and Theodore Roosevelt—were carved on a mountainside in the Black Hills of South Dakota and explore who these presidents were and what made them unique.

World History

Core Knowledge: Mesopotamia

- In this unit students will be introduced to Mesopotamia, an ancient civilization that developed in the land between the Tigris and Euphrates Rivers. Students will explore the development of agriculture, government, and writing in this ancient civilization.

1st Grade

Social Studies in 1st Grade includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Economic Choices

- This inquiry features an investigation of economic decision making through the context of how families manage their money. In examining the costs and benefits associated with making decisions about spending and saving money, students will develop an argument answer the question “What choices do we make with our money?”

Engage NY: The President

- This inquiry engages students in exploring the meaning and purpose and function of government through the question “Is the president the most important person in government?” Students explore the different levels of governmental leadership and will consider their own ideas for desired change within their communities.

Core Knowledge: Lessons in Civics

- This unit provides a broad overview of what it means to be part of a community, including what it means to be a member of a community, the purpose and importance of rules and laws, and more.

Geography and Skills

Core Knowledge: Continents, Countries, and Maps

- In this unit, students use their map skills to discover our world and their place in it. The unit begins by exploring maps—looking at different types of maps and how to read them. Students then travel across the seven continents and the four oceans.

American History

Core Knowledge: Early Civilizations of the Americas

- In this unit, students explore several different powerful civilizations that people created in North and South America long ago. Beginning with the arrival of the first humans into the Western Hemisphere, the unit looks at the evolution of civilization in the Americas, from hunters and gatherers to complex cities through the cultures of the Maya, Aztec, and Inca.

Core Knowledge: Early Explorers and Settlers

- This unit looks at major reasons for the exploration of the “New World,” ranging from perceived easy access to wealth to a longing for religious freedom. Students will explore the Americas with Columbus and the conquistadors who followed, looking at Europeans’ interactions with the indigenous peoples and at the often-tragic results.

Core Knowledge: From Colonies to Independence

- This unit follows the evolution of the thirteen North American colonies, from their dependence on Great Britain to their victory in becoming an independent nation.

World History

Core Knowledge: Three World Religions

- This unit explores the history of Judaism, Christianity, and Islam, three major religions that developed in the same part of the world. The unit introduces students to the history and basic teachings of these three important religions with a tone of respect and balance.

Core Knowledge: Ancient Egypt

- In this unit, students will study the geography of Egypt, specifically the Nile River, as well as the culture and beliefs associated with the ancient Egyptians.

Core Knowledge: Culture of Mexico

- In this unit, students explore Mexico, a country with a rich and varied heritage combining Native American, Spanish, and other influences to create the vibrant culture it enjoys today.

2nd Grade

Social Studies in 2nd Grade includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Civic Ideals and Practices

- Through the question “Do we have to have rules?,” this inquiry investigates the relationship between rules and values as well as the role that rules play in maintaining a civil society. Students learn that there is a key relationship between what we value and the rules we develop, follow, and enforce.

Core Knowledge: Economics

- This unit provides an introduction to economics, including goods and services, needs and wants, types of resources, scarcity, and more.

Geography and Skills

Core Knowledge: Geography of the Americas

- In this unit, students become explorers of the diverse landscapes of North and South America and discover the many ways people have found to survive and thrive in them.

American History

Core Knowledge: Making the Constitution

- In this unit, students discover that Americans had a difficult task at hand after winning the Revolutionary War: they had to figure out a better way to govern themselves. Students explore the roles that leaders played in developing and implementing the constitution and how the constitution is still relevant today.

Core Knowledge: War of 1812

- This unit introduces students to the conflicts with Great Britain that led to the Battle of Tippecanoe and eventually to a war between the United States and Great Britain in 1812.

Core Knowledge: Americans Move West

- This unit covers westward expansion as towns and cities along the East coast grew. Students will learn about important modes of transportation, the Gold Rush, and the Pony Express. Students will also explore the negative impact of westward movement on Native Americans.

Core Knowledge: Civil War

- This unit explores the difficult subject of the Civil War in an age-appropriate way without wavering from the difficult truths. Students see the beginnings of slavery in America, and the moral struggles and compromises surrounding it.

Core Knowledge: Civil Rights Leaders

- This unit celebrates the lives of people who faced injustice with bravery and were able to make extraordinary changes for good. The unit explores the growth of equality in the United States through iconic individuals.

World History

Core Knowledge: Ancient Greece

- This unit explores the ideas, patterns of government, and art forms that have formed the basis of much of our own culture. Students will discover many of the political and philosophical building blocks that inform our own society today.

Core Knowledge: Ancient India

- This unit introduces students to the early Asian civilization of ancient India, including geography, culture, and religion.

Core Knowledge: Ancient China

- This unit introduces students to the civilization of ancient China, including geography, culture, and beliefs.

Core Knowledge: Culture of Japan

- This unit explores the physical geography and society of Japan, as well as the rich cultural traditions that still resonate within this modern, industrialized nation.

3rd Grade

Social Studies in 3rd Grade includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Cultural Diversity

- This inquiry engages students in expanding their understanding of diverse cultures. The question “How does our culture make us similar and different?” allows students to examine diverse cultures and histories.

Engage NY: Leadership and Government

- This inquiry is an exploration into governments around the world in which students examine how the fundamental principles of governments vary. Students will develop an argument that answers the question “Does it matter how leaders are chosen?”

Engage NY: Global Trade

- This inquiry leads students through an investigation of economic systems by focusing on the context of trade among world communities. Students will develop an argument to answer the question “Why do countries need each other?”

Geography and Skills

Core Knowledge: World Rivers

- In this unit, students explore the benefits and dangers of rivers. They learn why ancient civilizations and modern cities were established near rivers, and how rivers impact major historical events.

Core Knowledge: Canada

- This unit introduces the geography and people of Canada. Students learn about Canada’s government, major population centers, and the country’s vast wilderness and natural resources. They are introduced to Canada’s indigenous peoples and to its French and British heritage, which lie behind the country’s two official languages.

American History

Core Knowledge: Earliest Americans

- This unit introduces some of the different native peoples who populated America many years before the arrival of European explorers. Students explore how early peoples adapted to their environments and developed unique cultures.

Core Knowledge: Exploration of North America

- This unit focuses on Spanish explorers who crossed the Americas in search of gold and riches, and other European explorers who searched for the Northwest Passage. Students reinforce map skills and geographic knowledge and learn about interactions of the explorers with Native Americans.

Core Knowledge: Immigration and Citizenship

- This unit looks at the influx of people coming to America from the 1800s to the present day—at who they were and why they came, and what happened to them once they got here.

World History

Core Knowledge: Ancient Rome

- In this unit, students learn about ancient Rome’s lasting contributions in political ideas and institutions, architecture, and literature. Students also investigate historical sources to write an essay on the rise and fall of Rome.

Core Knowledge: Vikings

- This unit introduces students to the geography of Scandinavia and the history of the Vikings. Students learn about the voyages of Eric the Red and his son, Leif Eriksson.

4th Grade

Social Studies in 4th Grade includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Declaration of Independence

- This inquiry asks why countries declare their independence with a focus on the argument made in the United States Declaration of Independence. With a firm understanding of the American colonists’ argument for independence, the inquiry shifts to students conducting research on declarations of independence in other parts of the Western Hemisphere.

Geography and Skills

Core Knowledge: Using Maps

- This unit provides information and activities to help students use maps and globes effectively. Students learn geographical terms and how to use map symbols, keys, and map scales. They are introduced to longitude and latitude and using coordinates and degrees.

Core Knowledge: World Lakes

- This unit begins with a review of map skills and geographical terms. Students learn about the benefits and resources provided by lakes.

American History

Core Knowledge: The American Revolution

- This unit examines the causes, key events, and major figures of the Revolutionary War, including the growing conflict between the colonies and Britain.

Core Knowledge: The U.S. Constitution

- In this unit, students learn why the Bill of Rights was added to the Constitution and explore reasons why the Constitution has survived as the guiding document of government in the United States.

Core Knowledge: Early Presidents

- This unit focuses on the first seven presidents of the United States: George Washington, John Adams, Thomas Jefferson, James Madison, James Monroe, John Quincy Adams, and Andrew Jackson.

Core Knowledge: American Reformers

- This unit focuses on many efforts to improve American society from the early 1800s to the 1850s, including the temperance movement, better treatment for people with mental illnesses, free public education, the abolition of slavery and the early women's rights movement.

World History

Core Knowledge: Medieval Europe

- In this unit, students gain a foundational understanding of the historical and geographical context of the Middle Ages and study Western and Eastern Roman Empires. Students examine the influence of the Catholic church, the feudal system, castles and manors, and the legacy of the Middle Ages.

Core Knowledge: Medieval Islamic Empires

- In this unit, students learn about the historical significance of Muhammad and the origins of Islam in the Arabian Peninsula.

Core Knowledge: Early and Medieval African Kingdoms

- This unit begins with an overview of the geography of Africa. Then, students learn about early African kingdoms, the city of Timbuktu, and African works of art.

Core knowledge: Dynasties of China

- This unit introduces students to the major Chinese dynasties, including the Shang, Zhou, Qin, Han, Tang, Song, and Ming. It explores their lasting contributions to government, culture, technology, and philosophy, highlighting the development of Chinese civilization over thousands of years.

5th Grade

Social Studies in 5th Grade includes topics in Civics & Economics, Geography & Skills, American History, and World History. The units below are organized by social studies topic rather than by course sequence.

Civics and Economics

Engage NY: Complex Societies

- This inquiry provides students with an opportunity to evaluate a series of innovations by three complex civilizations— Maya, Aztec, and Inca – and examine the question “What makes a complex society complex?”

Geography and Skills

Core Knowledge: Geography of the United States

- This unit reinforces map and globe skills as students learn about the geographic characteristics of different regions.

Core Knowledge: World Deserts

- In this unit, students review skills of using maps and globes and then apply those skills in learning about deserts of the world. They explore the characteristics of desert landscapes and life forms.

Core Knowledge: World Lakes

- This unit begins with a review of map skills and geographical terms. Students learn about the benefits and resources provided by lakes.

American History

Core Knowledge: Maya, Aztec, and Inca Civilizations

- This unit explores three ancient Mesoamerican civilizations in geographical and cultural context.

Core Knowledge: The Civil War

- This unit explores the causes of the conflict between the North and South, including slavery and states' rights. It covers key events, leaders, and battles of the war, as well as the war's lasting impact on the nation and the abolition of slavery.

Core Knowledge: Westward Expansions – Before and After the Civil War

- This unit explores how and why Americans moved west and the motivations and repercussions before and after the Civil War.

Core Knowledge: Native Americans – Cultures and Conflicts

- This unit explores the ways of life of diverse Native American groups and goes on to examine how their cultures were disrupted, displaced, and profoundly altered by westward expansion and policies and practices in the 1800s.

Core Knowledge: Immigration

- In this unit, students investigate the history of immigration to America in the 1800s and early 1900s and the reasons why so many people left their home countries to better their lives in “the land of opportunity.”

World History

Core Knowledge: Age of Exploration

- This unit introduces students to European exploration and trade from 1400 to the 1600s. Students learn about motivations for European exploration.

Core Knowledge: The Renaissance

- In this unit, students are introduced to the works of prominent Renaissance artists, writings on courtly behavior, Machiavelli's ideas about politics, and the Renaissance spirit in literature.

Core Knowledge: The Reformation

- This unit tells the story of the 16th-century religious upheaval (the Reformation), which led to the founding of Protestantism and had far-reaching social and political consequences.

Core Knowledge: England's Golden Age

- This unit explores England in the 1500s and 1600s, a time of religious conflicts and political change, including the reigns of Henry VIII, Queen Elizabeth the 1st, and Charles I & II.

Core Knowledge: Early Russia

- This unit introduces students to major geographical features of the vast lands of Russia and tells the story of how Russia grew from a small principality to a large country ruled by powerful czars.

Core Knowledge: Feudal Japan

- This unit introduces students to the history of feudal Japan, including the geography, the rise of shoguns, the role of samurais, and the impact of trade.

Core Knowledge: Independence for Latin America

- This unit students explore the wave of independence movements that led to the liberation of French, Spanish, and Portuguese Latin American colonies.

6th Grade

Social Studies in 6th Grade includes topics in Geography & Skills, American History, and World History. Students will explore these topics through the use of the Core Knowledge History & Geography Curriculum, Engage NY Curriculum, and William & Mary Curriculum. The units below are organized by social studies topic rather than by course sequence. Additional units will be added to the 6th grade Course of Study throughout the year, and the document will be updated accordingly.

Civics and Economics

Financial Fitness for Life

This unit will explore key concepts behind personal finance including budgeting, banking, and financial risks.

Wide World of Trade

This unit introduces the economic relationships between countries that influence the modern economic models.

American History

William and Mary: 1920s in America – A Decade of Change

- Centered on a variety of primary sources, including music and advertisements as well as more traditional documents, this unit provides insight into not only the events, but also the values, lifestyles, and experiences of the period of the 1920s. Students explore the concept of cause and effect and how it relates to the events of the time.

William and Mary: 1930s in America – Facing Depression

- This unit for students in grades 6–7 explores Depression-era America from the perspective of many different groups of people, utilizing a variety of primary sources to illustrate events and the social-political context. The concept of cause and effect is employed to support student understanding of the complexity of history. The unit emphasizes the interplay of changes in geography, government, and the economy, as well as the influence of particular individuals and groups, to deepen student understanding of the period.

Core Knowledge: Reform in Industrial America

- In this unit, students examine the groups and individuals who worked for political, economic, and social reform in America in the late 1800s and early 1900s.

World History

Core Knowledge: Ancient Greece and Rome

- In this unit, students explore how the cultural and political traditions of ancient Greece and Rome have influenced Western society more profoundly than perhaps any other civilizations in world history. The political institutions of these two great civilizations have been incorporated into many subsequent societies, and students explore this integration throughout the unit.

Core Knowledge: The Enlightenment

- In this unit, students explore the ideas of influential writers, scientists, and philosophers in Western Europe from the late 1600s through the 1700s. Students also explore how the ideas of Europe's Enlightenment thinkers are echoed within the Declaration of Independence and the U.S. Constitution.

Core Knowledge: French Revolution and Romanticism

- This unit introduces students to both the French Revolution and the cultural movement known as Romanticism.

Core Knowledge: Industrial Revolution

- In this unit, students examine the sweeping transformation in how people worked and lived during the Industrial Revolution, 1760s–1830s.

Core Knowledge: Industrialization and Urbanization in America

- In this unit, students explore the significant demographic and economic shifts that took place in the United States in the late 1800s and early 1900s, as the rise of big business ushered in a new era across the country.

World History

World History explores the development of human societies from the earliest civilizations to the modern era. Students will examine political systems, economic structures, cultural traditions, technological innovations, and interactions among peoples across the globe. Through the use of the OpenStax *World History* curriculum, students will analyze historical sources, identify patterns of continuity and change, and develop an understanding of how past events have shaped the modern world. The units below are organized by historical era and major themes. Additional units may be added throughout the year, and this document will be updated accordingly.

Early Human Societies

Early Humans

- This unit examines the origins of humanity and the development of early societies, as well as patterns of human migration. Students explore the transition from hunter-gatherer communities to settled agricultural civilizations and analyze how the Neolithic Revolution propelled humans towards developing hierarchical societies.

Early Civilizations

- Students investigate the rise of the world's earliest civilizations in Mesopotamia, Egypt, the Indus River Valley, and China. The unit focuses on how the switch to agriculture led to the development of government, religion, social structures, writing systems, and technological innovations.

The Near East

- This unit explores more extensively the civilizations of Mesopotamia. Students will explore how the world's first empires developed, with a particular focus on belief systems and the rise of Judaism

Asia in Ancient Times

- Students focus on the development of ancient Chinese societies and empires in East Asia. This unit also explores the rise of civilizations in Japan, Korea, and the nomadic tribes of the Steppes.

States and Empires in the Americas and Africa

The Ancient Americas

- This unit explores early migration to the Americas vis-à-vis migration theories. Students explore how empires developed in the Americas with case studies of the Inca, Mayan, and Aztec while elucidating the governmental and social structures of the Empires.

Ancient Africa

- Students investigate how geography and climate led to the rise of agriculture and advanced civilizations in Sub-Saharan Africa. After an examination of the Bantu peoples and the Kingdom of Kush, students then explore Africa's Mediterranean and Trans-Saharan trade connections to the Europe, the Near East, and Asia

An Age of Religion

Empires of Faith

- This unit focuses on religion as a factor the growth and spread of civilizations. A particular focus will be on Zoroastrianism in Persia, and the growth of the Byzantine Empire through the spread of Christianity

The Rise of Islam

- Students explore the rise of Islam in the Arabian Peninsula and its rapid spread throughout the region. Further, this unit investigates the formation of Islamic states through conquest while excavating life under Islamic rule and the Caliphate.

India, the Indian Ocean Basin, and East Asia

- This unit examines the Middle Ages of the Indian Ocean World. Students will examine how Hinduism and Buddhism spread throughout the region and into East Asia through trade networks

The Post-Roman West

- Students excavate how Christianity became the primary continuity between the collapse of the Roman Empire and the rise of the European feudal states in the Middle Ages. This unit also examines connections between Europe and the Levant through the Crusades

The Empire of the Mongols

- This unit explores the rise of the Mongols on the Asian Steppes. A particular focus will be on Genghis Khan as a unifier for the tribes of Mongolia. Additionally, students investigate the Islamification of the Mongols and imperial connections to the Chinese and Eurasia.

Connections Across Continents

The Ottomans

- Students examine the development of the world's largest Islamic Empire: the Ottomans. This unit will elucidate from where the Ottomans came, how social and governmental structures developed under the Sultan, and everyday life for Islamic and non-Islamic subjects of the empire.

The Atlantic World

- This unit explores transatlantic connections between Europe, Africa and the Americas through Triangle Trade. Students will investigate how the Protestant Reformation led to waves of European migration to North America. Lastly, students will understand how the Transatlantic Slave Trade resulted in the death and maltreatment of millions through the practice of chattel slavery.

An Age of Revolutions

Colonization and Economic Expansion

- Students excavate European expansion through the colonization of the Americas, and how this colonial expansion precipitated a new global economy and the development of Capitalism. Further, this unit introduces students to the Industrial Revolution and how it affected governments, societies, global trade, and concepts of social classes.

Global Revolutions

- This unit begins by introducing students to the political and social theories born from the Enlightenment. Students will then trace how Enlightenment ideology spread throughout Europe leading to revolutions in Europe and the Americas.

Expansion in the Industrial Age

- Students explore the emergence of the Second Industrial Revolution, and how the need for raw materials instigated the shift from colonialism to Imperialism. This unit elucidates how Europe came to dominate the global order through imperialism with the Scramble for Africa and dominating trade in Asia.

The Modern World

The War to End All Wars

- This unit analyzes the origins of WWI, from imperial competition, fragile alliances, and nationalist movements. Students explore the development of trench warfare, as well as concepts such as total war and the homefront. Additionally, this unit examines how colonies were drawn into the conflict in what was the first global conflict.

The Interwar Period

- Students investigate the period between the two world wars, beginning with the Paris Peace and the collapse of Empires, which gave way to numerous nation-states. Furthermore, this unit explores how a global economic depression became enmeshed with discontent of the Paris Peace to engender the spread of Communism, as well as the development of Fascism in Italy and Germany.

The Causes and Consequences of WWII

- This unit begins with a study of unstable peace across Europe, as a policy of appeasement allowed Hitler to rapidly militarize Germany and invade surrounding territories. Students investigate the outbreak of war and how the war became a global conflict with Fronts in Europe, Asia, and the Pacific. Moreover, a particular focus will be on how the Holocaust came to be and its devastating outcome as the dust settled in the wake of the war.

Cold War Conflicts

- Students explore how post-war political ideology manifested in a global tug-of-war between the democratic US and the communist USSR. This unit elucidates the development of global conflicts through proxy wars, forced regime changes, and nuclear proliferation. An examination of the USSR's dissolution concludes the unit.

The Contemporary World

- This final unit excavates the ways in which the contemporary world has become interconnected through global trade and technology. An emphasis is placed on both the positive and negative effects of globalization, from higher standards of living and robust economies to environmental degradation and the continued exploitation of the Global South. Students will finish this unit by questioning their role as global students and how all individual's choices and actions continue to shape world history.

American History

American History explores the development of the United States from the earliest peoples of North America to the modern era. Students examine political, economic, social, and cultural developments that have shaped the nation over time. Through the use of the OpenStax *U.S. History* curriculum, students will analyze primary and secondary sources, evaluate historical perspectives, and investigate the events and ideas that have influenced American society. The units below are organized by historical era and major themes. Additional units may be added throughout the year, and this document will be updated accordingly.

Foundations of America

Indigenous Peoples of North America

- This unit explores the diverse cultures, societies, and economies of Indigenous peoples before European contact. Students examine how geography influenced the development of Native American civilizations and communities throughout North America.

European Exploration and Colonization

- Students investigate the motivations for European exploration and the establishment of colonies in North America. The unit examines interactions among European settlers,

Indigenous peoples, and Africans, as well as the cultural and economic foundations of colonial society.

Colonial America

- This unit focuses on the growth and development of the British colonies. Students explore regional differences, self-government, economic systems, and the social and political changes that shaped colonial life.

Revolution and Nation Building

The American Revolution

- Students examine the causes, major events, and consequences of the American Revolution. The unit emphasizes the principles of liberty, self-government, and individual rights that influenced the creation of a new nation.

The Constitution and the Early Republic

- This unit explores the challenges of establishing a new government under the Constitution. Students investigate the structure of the federal government, debates over federal power, and the leadership of the nation's early presidents.

Expansion and Reform

- Students study the territorial growth of the United States and the social, political, and economic changes of the early nineteenth century. The unit examines westward expansion, Jacksonian democracy, and reform movements that sought to improve American society.

Division and Civil War

Slavery and Sectional Conflict

- This unit examines the expansion of slavery and the growing tensions between different regions of the United States. Students analyze political compromises, economic differences, and social movements that contributed to sectional divisions.

The Civil War

- Students investigate the causes, major events, and consequences of the Civil War. The unit focuses on military strategies, political leadership, and the experiences of soldiers and civilians during the conflict.

Reconstruction

- This unit explores the efforts to reunify the nation and redefine citizenship after the Civil War. Students examine constitutional amendments, political struggles, and the lasting impact of Reconstruction on American society.

Industrialization and Reform

Industrialization and Urbanization

- Students examine the rapid economic growth of the late nineteenth century and the rise of American industry. The unit explores technological innovation, immigration, urban growth, and changing working conditions.

The Progressive Era

- This unit focuses on reform efforts that addressed political corruption, social inequality, and economic challenges. Students investigate the role of reformers, journalists, and political leaders in shaping modern America.

America Becomes a World Power

- Students explore the emergence of the United States as an international power. The unit examines overseas expansion, diplomatic initiatives, and America's increasing involvement in global affairs.

Modern America

Prosperity and Crisis

- This unit examines the social and cultural changes of the 1920s and the economic collapse of the Great Depression. Students explore the causes and consequences of economic instability and the government's response to national challenges.

World War II

- Students investigate the causes, major events, and consequences of World War II. The unit emphasizes military, political, and social developments as well as the war's impact on the United States and the world.

The Cold War

- This unit explores the political, economic, and military rivalry between the United States and the Soviet Union. Students examine foreign policy, technological competition, and the effects of the Cold War on American society.

Contemporary America

Civil Rights and Social Change

- Students study movements that sought to expand equality and opportunity in American society. The unit examines the Civil Rights Movement and other efforts that transformed political and social life during the twentieth century.

Modern America in a Global Age

- This unit explores the challenges and opportunities facing the United States from the late twentieth century to the present. Students investigate globalization, technological innovation, political developments, and the evolving role of the United States in the world.

Citizenship and Civic Engagement

- This unit encourages students to connect historical understanding with active citizenship. Students examine the rights and responsibilities of citizens and explore how individuals can participate effectively in civic life.

High School

Modern States: American Government

This American Government course provides a comprehensive overview of the U.S. political system, including the Constitution, federalism, civil liberties, and the roles of the three branches of government. Students will explore the functions of political parties, interest groups, and the media in shaping public policy and opinion. Students will build a strong foundation in key concepts and historical developments essential to understanding American democracy.

Economics and Personal Finance

Students in Economics and Personal Finance will study how economic systems function and how individuals make financial decisions within those systems. They will develop practical skills in budgeting, saving, credit management, investing, and interpreting economic indicators to make informed personal and civic financial choices.

Science

Curriculum sources

Core Knowledge

Core Knowledge Science offers comprehensive materials to teach scientific concepts and develop scientific practices through hands-on activities. The curriculum helps students build knowledge in the life, physical, and earth/space sciences, as well as engineering design. This curriculum serves as the core science curriculum at Telra Institute in kindergarten through 5th grade.

Conceptual Integrated Science Explorations

Conceptual Integrated Science is taught in 6th, 7th, and 8th grade at Telra and is designed with late middle and early high school students in mind. This textbook presents a variety of sciences, including physics, chemistry, biology, Earth science, and astronomy, while exploring areas where these disciplines overlap. It's the wide story of science told in terms of its Unifying Concepts—major ideas from gravity to atoms and ecosystems—that cut across the science disciplines. This curriculum emphasizes a deep understanding of concepts in science.

College-level Science

Science courses in 9th grade & beyond at Telra are taught by college faculty using a variety of college textbooks in fields such as Biology, Chemistry, and Physics. Refer to the Central Piedmont Community College course catalog for further details.

Course sequence

Students follow a largely grade-level based progression through science courses until high school. Students who demonstrate a need for instruction below the minimum level for their numerical grade level will be referred for intervention and may be retained.

Grade Level Course

Kindergarten		
Physical Science • Pushes and Pulls • Science All Around Us	Life Science • Needs of Plants and Animals • Changing Environments • Our Five Senses	Earth Science • Weather Patterns
1 st Grade		

Physical Science • Exploring Light and Sound • Simple Machines • Science for Everyone		Life Science • Human Body Systems • Plant and Animal Survival		Astronomy • Sun, Moon, and Stars			
2 nd Grade							
Physical Science • Properties of Matter • Electricity and Magnetism • Learning About Science		Life Science • Organisms and Their Habitats • Human Cells and Digestion		Earth Science • Exploring Land and Water			
3 rd Grade							
Physical Science • Investigating Forces • Reading About Science • Codes and Computers		Life Science • Life Cycles, Traits, and Variations • Habitats and Change • Human Senses and Movement		Earth Science • Weather and Climate			
4 th Grade							
Physical Science • Energy Transfer and Transformation • Investigating Waves • Thinking Like an Engineer • Using Natural Resources for Energy		Life Science • Structures and Functions of Living Things • Electricity City • Human Respiration and Circulation		Earth Science • Processes that Shape the Earth • The Earth Beneath Our Feet		Astronomy • Astronomy and Space Systems	
5 th Grade							
Physical Science • Investigating Matter • Energy and Matter in Ecosystems • Thinking Like a Scientist				Earth Science • Modeling Earth Systems • Protecting Earth Resources • Acid, Acid Everywhere • Weather, Climate, and Water Cycling • Plate Tectonics and Rock Cycling • Natural Hazards			
Earth Science (typically taken in 6 th grade; eligible for high school earth/environmental science credit)							
Earth and Environmental Science • Plate Tectonics							

• Rocks and Minerals • Earth's Surface: Land and Water • Surface Processes • Weather • Earth's History • Environmental Geology • The Solar System • The Universe	
Biology (typically taken in 7 th grade; eligible for high school biology credit with required Biology EOC)	
Biology • The Basic Unit of Life: The Cell • How Cells Work • DNA and Genes • How Traits Are Inherited • The Evolution of Life • Diversity of Life • Control and Development • Care and Maintenance • Ecosystems and Environment	
Physical Science (typically taken in 8 th grade; eligible for high school physical science credit)	
Physics • Newton's Laws • Momentum • Energy • Gravity • Heat • Electricity • Magnetism • Waves and Sound • Light and Color • Properties of Light	Chemistry • The Atom • Nuclear Energy Elements of Chemistry • Bonds and Molecular Attractions • How Chemicals Mix • How Chemicals React • Acids, Bases, and Redox • Organic Compounds
High school – various college-listed science courses	

Course information

Kindergarten

Science in Kindergarten includes topics in Physical, Life, and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Core Knowledge: Pushes and Pulls

- In this unit, students investigate what causes changes in motion by exploring pushes and pulls. Students will then use prior knowledge and information gained from their observations during various tests to design a miniature golf course. Students explore how pushes and pulls can have different strengths and directions. Students also investigate how pushing or pulling on an object can change the speed and direction of its motion.

Core Knowledge: Science All Around Us

- In this unit, students explore science topics associated with science literacy. Additionally, a wider view of science literacy is that science interfaces with all aspects of human learning, such as art, history, biography, mathematics, music, philosophy, and literature.

Life Science

Core Knowledge: Needs of Plants and Animals

- In this unit, students learn that all animals need food to live and grow and that they obtain their food from plants or other animals. Students also learn that plants need air, water, mineral nutrients, and light to live and grow. Students learn that all living things need resources from their environment and that they live in places that have the things they need. Humans use natural resources for everything they do. Students describe the needs of plants and animals and their relationship with the local habitat as well as identify ways landscapes can be transformed into a habitat for plants and animals.

Core Knowledge: Changing Environments

- This unit builds on the study students conduct on the needs of plants and animals by examining the impact of living things on the environment to see how the environment is changed. Students explore how damaging the environment impacts the organisms that live there, the negative and positive ways humans impact the environment, and practical ways to protect the environment.

Core Knowledge: Our Five Senses

- In this unit, students will identify the body's five different senses—seeing, hearing, smelling, tasting, and touching. Students will explore what body parts are involved in each of these senses and experience how the senses interpret their surrounding environment. Students will also learn how we take care of the different senses and that certain devices can enhance or change how the senses work.

Earth Science

Core Knowledge: Weather Patterns

- In this unit, students learn about daily, weekly, and seasonal weather and how weather occurs in patterns that can be used to plan activities. Students learn about severe weather conditions and how to collect information related to severe weather. Students will investigate what types of severe weather may occur in their area and how people communicate warnings related to severe weather. Students then develop plans to prepare for severe weather emergencies.

1st Grade

Science in 1st Grade includes topics in Physical, Life, and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Core Knowledge: Exploring Light and Sound

- In this unit, students investigate with sound and light to see how sound and light can be used to communicate with an audience in a theater. Students will determine the relationship between vibrations and sound. Students will explore different light sources, mirrors, and shadows.

Core Knowledge: Simple Machines

- In this unit, students will identify simple machines—the ramp (inclined plane), wheel and axle, pulley, lever, wedge, screw, and gears. Students will explore where these devices are found and experience how they can make a given task easier. Students will also learn that simple machines are combined to make compound machines, which themselves can be familiar and be operated simply.

Core Knowledge: Science for Everyone

- In this unit, students explore science topics associated with science literacy. Additionally, a wider view of science literacy is that science interfaces with all aspects of human learning, such as art, history, biography, mathematics, music, philosophy, and literature.

Life Science

Core Knowledge: Human Body Systems

- In this unit, students will identify several body systems, including the skeletal, muscular, respiratory, circulatory, and nervous systems. Students will explore the different organs, tissues, and cells that are part of each system. Students will also investigate how these systems work in their own bodies.

Core Knowledge: Plant and Animal Survival

- In this unit, students examine physical and behavioral traits for survival as they plan an animal sanctuary and rehab agency. Students will then apply what they learn to determine how an animal rehab agency imitates nature to help animals survive. This series of lessons incorporates learning goals that support the principles and practices of engineering design, such as defining problems, testing materials, and evaluating possible solutions.

Astronomy

Core Knowledge: Sun, Moon, and Stars

- In this unit, students will methodically investigate the science of the patterns of the apparent movement of the space objects they can see from Earth. Over the course of the unit, students will record observations of the sun, moon, and stars over periods of time. By recording observations of these objects throughout the school year, students will learn about patterns in the sky.

2nd Grade

Science in 2nd Grade includes topics in Physical, Life, and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Learning About Science

- In this unit, students explore Science Literacy topics associated with the other content units of the Core Knowledge Science Grade 2 curriculum. Topics include who takes part in science, scientific evidence, analyzing and interpreting data, making predictions, engineering, and design.

Core Knowledge: Electricity and Magnetism

- In this unit, students will trace the path of electricity from the power plant, through their home, and to wall sockets. They will explore different devices that use electricity, as well as safety precautions around the use of electricity. Students will also investigate how magnets are used to produce electricity. By the end of the unit, students will be familiar with various phenomena associated with electricity and magnetism.

Core Knowledge: Properties of Matter

- In this unit, students learn that matter, the “stuff” of which everything is made, exists in many forms. Students will practice sorting and grouping materials by characteristics, called properties, and investigate how the properties of different types of matter make them useful for different tasks. Students take measurements, which permit simple comparisons of different objects.

Life Science

Core Knowledge: Organisms and their Habitats

- In this unit, students will plan a butterfly meadow that will come back and spread year after year. They will investigate the dependence of plants on air, water, nutrients and minerals, and light for growth and on the dependence of animals to pollinate flowers and disperse seeds. Students will also observe the diversity of life in different habitats.

Core Knowledge: Human Cells and Digestion

- In this unit, students will trace the path of the digestive system starting with hunger and the purpose of eating food. Students will explore the digestive system and its different parts, understanding the hierarchy of cells, tissues, organs, and organ systems. Students will also look at the building blocks of the body, cells. Students will end with identifying how waste leaves the body and investigating the nutritional needs of our bodies as well.

Earth Science

Core Knowledge: Exploring Land and Water

- In this unit, students explore the phenomena of different landforms to gather evidence of how Earth events change Earth’s surface. Students explore types of landforms, including hills, mountains, valleys, rock arches, plains, geysers, volcanoes, sand dunes, and beaches. By the end of the unit, students will understand the ways landforms are created quickly and slowly and how water can impact landforms.

3rd Grade

Science in 3rd Grade includes topics in Physical, Life, and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Core Knowledge: Investigating Forces

- This unit introduces Grade 3 students to real-world examples and fundamental concepts of forces, which will be explored in greater depth in later grades. Students will learn about observable effects of balanced and unbalanced forces on an object's motion, describe and predict patterns of repeating motion, and explore how forces are associated with cause-and-effect relationships.

Core Knowledge: Codes and Computers

- In this unit, the goal of instruction is for students to identify the output of any computer device as a solution to a problem and deconstruct the solution into the necessary steps required.

Core Knowledge: Reading About Science

- In this unit, students explore Science Literacy topics associated with the other content units of the Core Knowledge Science Grade 3 curriculum. Topics include variables, controls, scientific evidence, fair tests, systems, and fact vs. Opinion.

Life Science

Core Knowledge: Life Cycles, Traits, and Variations

- This unit examines the life cycles of various plants and animals, including the defining characteristics that are shared or varied by individuals in the same population. Students investigate how life cycles of various organisms differ and what they have in common: the pattern of birth, growth, reproduction, and death. The focus then shifts to how organisms can be described by their traits and the visible evidence that traits are inherited. Students learn how the environment can affect traits and how traits can impact survival.

Core Knowledge: Habitats and Change

- This unit introduces students to fundamental concepts of habitats, adaptations, ecosystems, and environmental changes over time. Students will learn about the relationships between living things and their environments. They see that organisms are adapted to live in specific habitats. But when the habitats change, suddenly or over millions of years, the same adaptations that allowed success in one habitat may not be those that ensure survival in another.

Core Knowledge: Human Senses and Movement

- In this unit, students will consider the body structures, systems, and functions that contribute to the ability to play table tennis, particularly to the ability to return a fast serve of a table tennis ball. Vision and hearing provide the perception needed for the response. The interactions of the nervous, skeletal, and muscular systems produce the body's motion in the response.

Earth Science

Core Knowledge: Weather and Climate

- This unit focuses on weather and climate. Students describe patterns of weather across time and location. They learn the difference between weather and climate. Students study Earth's

atmosphere and the mixture of gases surrounding our planet. A major focus of this unit is the role of water in the atmosphere and the importance of evaporation, condensation, and precipitation.

4th Grade

Science in 4th Grade includes topics in Physical, Life, and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Core Knowledge: Energy Transfer and Transformation

- This unit engages students with the idea that whenever there is a change, there is at least one form of energy causing that change. Students investigate evidence of energy all around them.

Core Knowledge: Investigating Waves

- This unit engages students with waves and observable evidence that energy moves from one place to another. Waves produced in one place move to another and can cause a change. Students investigate some of the more common forms of waves around them: water waves, sound waves, and light waves.

Core Knowledge: Using Natural Resources for Energy

- In this unit, students focus on renewable and nonrenewable resources. They study how people use resources for energy. In addition, they examine the engineering design behind new technologies that protect the environment.

Life Science

Core Knowledge: Structures and Functions of Living Things

- This unit helps students to make the connection between structure and function at all levels of biological organization. Cell, tissues, organs, and organ systems are investigated through the lens of structure and function—things look like they do as a reflection of their functions. The cells of a leaf, the tissues of the skin, and the respiratory system of a giant ape—they all can be understood when students know that structure and function are related.

Core Knowledge: Human Respiration and Circulation

- In this unit, students will consider the respiratory and circulatory systems and the role those systems play when students participate in a fun run. The circulatory system moves blood and oxygen through the bloodstream, while the respiratory system exchanges the oxygen for the waste product carbon dioxide.

Earth Science

Core Knowledge: Processes that Shape the Earth

- In this unit, students explore the dynamic nature of Earth, including the layers of our planet: the inner and outer core, the mantle, and the crust. Students explore continental drift, weathering, erosion, and other changes over time.

Astronomy

Core Knowledge: Astronomy and Space Systems

- In this unit, students will learn about Earth, our solar system, our galaxy the Milky Way, and our place in the universe. They will focus on a big vision, that we are part of a large solar system, which lies within in an even larger galaxy that is but one of many millions of galaxies in the universe.

5th Grade

Science in 5th Grade includes topics in Physical and Earth Science. The units below are organized by science rather than by course sequence.

Physical Science

Core Knowledge: Investigating Matter

This unit introduces students to real-world examples and fundamental concepts of matter, which will be explored in greater depth in later grades. Students will learn about properties, structures, and interactions of matter as well as the basics of the language of chemistry

Core Knowledge: Energy and Matter in Ecosystems

This unit focuses on the scientific concept that energy and matter flow through an ecosystem to individual organisms and back to the ecosystem in a continuous cycle.

Earth Science

Core Knowledge: Modeling Earth Systems

This unit allows students to investigate a model to comprehend the complexity of the many parts of the Earth. Students learn about and explore the four “spheres” that comprise all the physical and biological factors of Earth. After defining each sphere, the unit then addresses the interactions of these spheres. In this way, students have a model that simplifies the planet we live on.

Core Knowledge: Protecting Earth Resources

In this unit, students will focus on how humans can preserve and protect the many natural resources we use for modern life—for agriculture, transportation, industry, and daily needs. Students learn about our protection of water resources, air and the atmosphere, and the land. Students become aware that, through scientific practices and technology, we can detect when air, water, land, and ecosystems are changing, and when they might be threatened.

Core Knowledge: Weather, Climate and Water Cycling

In this unit, students investigate the phenomenon of weather, including the water cycles and climate. This unit allows students to observe weather and climate phenomenon in detail and then start asking questions, formulating explanations, setting up and conducting activities and research, and working with classmates to analyze the shared experience and formulate new questions and developing new strategies for answering them.

Core Knowledge: Plate Tectonics and Rock Cycling

In this unit, students investigate the phenomena of the building up of Earth’s Surface and the wearing down of Earth’s surface. This unit allows students to observe the phenomena of the shifting landscapes of Earth and ask and answer questions surrounding earthquakes, volcanic eruptions, and more.

Core Knowledge: Natural Hazards

In this unit, students investigate the phenomenon of natural hazards. Using the phenomenon of a tsunami, this unit examines the causes and effects of tsunamis, ways science can help us understand their origins and paths, and what we can do to protect our communities from damage.

6th Grade

6th graders will study Earth and Environmental Science and will receive high school credit for their work in this course.

Earth Science

- Chapter 31: Plate Tectonics – Students begin with a focus on plate tectonics and Earth’s internal structure. Students gain an understanding of continental drift, earthquakes, volcanoes, tsunamis, mountains, valleys, and more.
- Chapter 32: Rocks and Minerals – Students will explore rocks and minerals, which provide insight into Earth’s processes.
- Chapter 33: Earth’s Surface: Land and Water – Students dig into the formation of various features found on Earth’s surface, including mountains, plains, and oceans. Students will understand how faults play a role in the formations.
- Chapter 34: Surface Processes – Students will explore how both mechanical and chemical weathering shape the Earth’s surface.
- Chapter 35: Weather – Students will explore weather and climate. This chapter will explore atmospheric pressure, wind chill, the Coriolis Effect, the impact of latitude on temperature, the reason for the seasons, and more.
- Chapter 36: Earth’s History – In this chapter, students will explore the history of Earth dating back approximately 4.6 billion years through the use of radiometric dating.
- Chapter 37: Environmental Geology – In this chapter, students explore earthquakes, tsunamis, volcanoes, and hurricanes.

Astronomy

- Chapter 38: The Solar System – In this chapter, students will learn about the moon, eclipses, the formation of the solar system, the sun, the planets, and what makes Earth suitable for life.
- Chapter 39: The Universe – Students will expand their study of astronomy beyond our solar system and will explore stars, light-years, supernovae, black holes, galaxies, and more.

7th Grade

7th graders will study biology and will take the Biology EOC to earn high school credit.

Biology

- Chapter 22: The Basic Unit of Life: The Cell – This chapter introduces students to the basic unit of life, which is the cell. Students will begin by exploring the two major types of cells: prokaryotic and eukaryotic.
- Chapter 23: How Cells Work – Students will explore how molecules enter and exit cells, how cells communicate with each other, and how they reproduce. Students will also explore and understand photosynthesis.

- Chapter 24: DNA and Genes – Students will explore how traits of an organism are transferred to offspring with a focus on genes. Students will be introduced to DNA, or deoxyribonucleic acid.
- Chapter 25: How Traits Are Inherited – This chapter dives into Mendelian Genetics and dominant/recessive traits. Students will also discuss applications of molecular genetics, which as the human genome and GMOs.
- Chapter 26: The Evolution of Life – Students will study how life has evolved through the process of natural selection and adaptation to the environment. Students will explore this through larger animals with longer life-spans and creatures with short life spans, such as bacteria.
- Chapter 27: Diversity in Life – Students will explore the classification of living things, including the three domains of life, which are archaea, bacteria, and eukarya.
- Chapter 28: Control and Development – This is the first of two chapters on the human body. In this chapter, students focus on a basic introduction to the components of the human body on both a structural and chemical level.
- Chapter 29: Care and Maintenance – Students continue their study of the human body, with a focus body systems, nutrition, exercise, and health.
- Chapter 30: Ecosystems and Environment – Throughout their study of biology, students move from the micro to the macro level. This last chapter focuses on ecology, which is the study of how living organisms live and work together.

8th Grade

8th graders will study both chemistry and physics this year, earning high school credit for physical science.

Chemistry

- Chapter 14: The Atom – Students are introduced to atoms and learn that all matter in our daily environment is made up of atoms. Students explore the periodic table and how elements can come together to form compounds.
- Chapter 15: Nuclear Energy – In this chapter, students learn about the discovery of radioactivity and the stability of nuclei. Students will learn about half-life, radiometric dating, and transmutation.
- Chapter 16: Elements of Chemistry – Students will explore chemistry, which is the study of matter and the transformations it can undergo.
- Chapter 17: Bonds and Molecular Attractions – In this chapter, students will explore how atoms bond through the use of electron-dot diagrams. Students will learn about ionic, metallic, and covalent chemical bonds.
- Chapter 18: How Chemicals Mix – Students will move from studying atoms and compounds to studying solutions. Students will also be introduced to the idea of moles.
- Chapter 19: How Chemicals React – In this chapter, students will apply their mathematical understanding the chemistry to balance chemical equations.
- Chapter 20: Acids and Bases – Students explore acids and bases and the chemical reaction class of acid/base reactions. Students will also learn about oxidation and reduction as part of chemical reactions.
- Chapter 21: Organic Compounds – During this chapter, students will focus on organic compounds and the element carbon. This chapter introduces students to the basics of organic chemistry.

Physics

- Chapter 1: About Science – Students begin with a study of the history of and advances in science, including an overview of the scientific method. Students also learn the importance of mathematics to science and dive into the science as an integrated discipline.
- Chapter 2: Newton’s First Law – As students dive into their study of physics, they will begin with Newton’s First Law, which states that things at rest tend to stay at rest, things in motion tend to stay in motion.
- Chapter 3: Newton’s Second Law – In this chapter, students learn about acceleration in relation to Newton’s Second Law, with a focus on the idea that the greater the force, the greater the acceleration when accounting for net force.
- Chapter 4: Newton’s Third Law – Students will explore Newton’s Third Law and the relationship between action and reaction on objects with the same and different masses.
- Chapter 5: Momentum – Students will learn that momentum is inertia in motion and is the product of an object’s mass and velocity. Students will use their knowledge of acceleration to help them determine momentum.
- Chapter 6: Energy – Students learn that to calculate work, they must multiply force by distance, but that in order to apply force, you must also apply energy. Energy is defined in physics as the capacity to do work.
- Chapter 7: Gravity – In this chapter, students explore gravity, which is an attractive force exerted between all objects that have mass. Students will learn the equation for the force of gravity and the impact of gravity on moving objects.
- Chapter 8: Heat – This chapter begins by instilling in students that temperature and heat are not the same thing. Students will learn about thermal expansion, conduction, convection, and radiation.
- Chapter 9: Electricity – Students begin with a study of electrostatics in which they define electrical force, electric charge, conservation of charge, and Coulomb’s Law. Then, students explore electricity and gain an understanding of the conditions needed for electricity to flow.
- Chapter 10: Magnetism – Students will understand that the movement of charge generates magnetism. Students will also learn that even permanent magnets lose their magnetism over time.
- Chapter 11: Waves and Sound – Students begin by examining waves, which are a form of energy. Students learn the properties of waves and the types of wave, along with how these related to sound.
- Chapter 12 Light and Color – Students will explore the electromagnetic spectrum, light and color visible to humans, and the reasons behind the way we perceive color.
- Chapter 13: Properties of Light – In this chapter, students focus on reflection and refraction. Reflection is when light bounces off of a surface, which refraction is when the path of light bends as it moves through an object or objects.

English

Curriculum sources

Core Knowledge Language Arts

Core Knowledge Language Arts is a comprehensive language arts curriculum program. While teaching skills in reading, writing, listening, and speaking, Core Knowledge Language Arts (CKLA) also builds students' knowledge and vocabulary in literature, history, geography, and science. In the primary grades, CKLA is split into two strands: Skills and Listening & Learning. These are two different instructional groups at Telra Institute.

Shurley Grammar

Shurley Grammar is a unique tool, specifically designed to help students master the parts of speech and sentence structure. Students learn definitions for the parts of speech through jingles that incorporate rhythm, rhyme, movement, and fun. Through word analysis, students gain a better understanding of the parts that make up a sentence. With this basic grammar foundation in place, students are introduced to a clear, structured method for writing sentences that provide for clear, precise communication.

Zaner-Bloser Handwriting

Zaner-Bloser Handwriting follows a three-step model to help students master both manuscript and cursive handwriting skills. This program is used with students in kindergarten through 3rd grade.

William and Mary Literature Units

William and Mary Literature Units were developed by the Center for Gifted Education at the College of William and Mary for use with high-ability learning. The units are grounded in the Integrated Curriculum Model, which includes the dimensions of advanced content, higher-level processes, and interdisciplinary concepts. These units center on an overarching concept and include rich literature.

Ormiston Academies Trust English

The OAT curriculum is a comprehensive English program designed for students in grades 6-12. The modules of the program are designed to tell a clear story of English and balance the needs of reading, writing, and speaking. Students will read a variety of classic pieces of literature and grow as writers while using this curriculum.

Classical Academic Press

Our logic & rhetoric sequence exposes our students to a classical approach to thinking, writing, and debate. They learn to deploy time-tested techniques to everyday life and to develop the reasoning and persuasion skills in preparation for college and beyond.

College-level English

Additional English courses in 9th grade & beyond at Telra are taught by college faculty using a variety of college textbooks in fields such as Composition and Literature. Refer to the Central Piedmont Community College course catalog for further details.

Course sequence

This course of study may have additional starting points that begin part way through a standard course based on student readiness level, and students will not complete all of the courses listed as some material is covered in multiple courses depending on student readiness. Courses must be completed no later than the end of the grade level listed in the right-hand column of the table below with a grade of 60% or higher to be considered passing. Students who demonstrate a need for instruction below the minimum level for their numerical grade level will be referred for intervention and may be retained.

Primary Grades (K-3rd Grade)

Skills	Listening and Learning (Grade-Level Based)	Completed No Later Than...
Primary ELA 1 CKLA Skills Kindergarten	Kindergarten - CKLA Listening & Learning Kindergarten - Zaner-Bloser Handwriting Kindergarten	End of Kindergarten
Primary ELA 2 CKLA Skills Grade 1	1 st Grade - CKLA Listening & Learning Grade 1 - Shurley Grammar 1 - Zaner-Bloser Handwriting Grade 1	End of 1 st Grade
Primary ELA 3 CKLA Skills Grade 2	2 nd Grade - CKLA Listening & Learning Grade 2 - Shurley Grammar 2 - Zaner-Bloser Handwriting Grade 2	End of 2 nd Grade
Primary ELA 4 CKLA Skills Grade 3	3 rd Grade - CKLA Listening & Learning Grade 3 - Shurley Grammar 3 - Zaner-Bloser Handwriting Grade 3	End of 3 rd Grade
Primary ELA 5 - CKLA Grade 4 - Mind Your Time* - Caesar's English I		
Primary ELA 6 - CKLA Grade 5 - Perspectives*		

Caesar's English II		
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Intermediate ELA (4th-5th Grade)

ELA Course	Completed No Later Than...
Intermediate ELA 1 - CKLA Grade 4 - Mind Your Time* - Caesar's English I	End of 4 th Grade
Intermediate ELA 2 - CKLA Grade 5 - Perspectives* - Caesar's English II	End of 5 th Grade
Intermediate ELA 3 - CKLA Grade 6 - Literary Reflections* - Shurley Grammar 6	
Intermediate ELA 4 - CKLA Grade 7 - Patterns of Change* - Shurley Grammar 7	

Middle School and Advanced ELA (6th-8th Grade)

Middle School ELA 1 - OAT K3 Year 7 - Shurley Grammar 7 - Word Within the Word I	End of 6 th Grade
Middle School ELA 2 - OAT K3 Year 8 - Shurley Grammar 8 - Word Within the Word II	End of 7 th Grade
Advanced English 1 (HS English 1 Credit) - OAT K3 Year 9 - Art of the Argument - Open to qualifying 7th/8th graders	End of 8 th Grade
Advanced English 2 - OAT K4 Year 10/11 (select units) - Discovery of Deduction	

Open to qualifying 8th graders who completed Advanced English 1	
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High School English

Rhetoric / Honors English 2 (HS English 2 credit with EOC exam) Rhetoric Alive	End of 10 th grade
Various college-level English courses	

Course information

Listening and Learning: Kindergarten

This grade-level based course includes the acquisition of rich background knowledge on topics that overlap with our science and social studies curriculum.

CKLA Listening and Learning

Domain 1: Nursery Rhymes and Fables

- This domain will introduce students to nursery rhymes and fables that have been favorites with children for generations.

Domain 2: The Five Senses

- This domain includes an exploration of the senses that requires students to make observations and use language to describe those observations.

Domain 3: Stories

- This domain will introduce students to classic stories. Students will acquire an understanding of the elements of a story including characters, plot, and setting while developing an awareness of language.

Domain 4: Plants

- In this domain, students will acquire a fundamental understanding of the parts of plants and how they grow. They will learn what plants need in order to stay alive and begin to understand the life cycle of plants, pollination, and photosynthesis.

Domain 5: Farms

- This domain will introduce students to several farm animals and crops that people grow on farms. Students will learn how farmers meet the needs of animals and will be able to contrast how plants make their own food with how animals get their food from eating plants or other living things.

Domain 6: Native Americans

- This domain introduces students to the broad concept that indigenous people lived on the continents of North and South America long before European explorers visited and settled in this area. Students will learn each tribe had its own way of eating, dressing, and living.

Domain 7: Kings and Queens

- In this domain, students will learn about kings, queens, and royal families. This unit includes both fiction and non-fiction selections to build understanding of the responsibilities, lifestyle, and customs associated with royalty throughout history.

Domain 8: Seasons and Weather

- This domain will introduce students to the concept of weather. Students will learn the different regions experience different weather patterns and that we can think of weather patterns in terms of seasons.

Domain 9: Columbus and the Pilgrims

- This domain will introduce students to the first voyage of Columbus, and the voyage of the Pilgrims 128 years later. This unit stresses the similarities between these voyages and interactions between Europeans and Native Americans.

Domain 10: Colonial Towns and Townspeople

- In this domain, students will learn about daily life during colonial times and important historical events.

Domain 11: Taking Care of the Earth

- In this domain, students are introduced to environmental awareness. They learn to conserve Earth's resources by reducing, reusing, and recycling.

Domain 12: Presidents and American Symbols

- This domain explores the lives and legacies of five famous presidents and introduces students to several national symbols. Students will understand the differences between a king and a president.

Shurley Grammar

Jingles

- Students will begin to learn the Shurley Grammar jingles, which incorporate domain-specific language through the incorporation of rhythm, rhyme, and movement. The Jingles provide a multi-sensory approach to allow students to understand and retain grammar concepts.

Zaner-Bloser Handwriting

Kindergarten

- Students will learn to form their manuscript letters through a step-by-step process. Students also learn to evaluate their own handwriting for meaningful application across subject areas.

Listening and Learning: 1st Grade

This grade-level based course includes the acquisition of rich background knowledge on topics that overlap with our science and social studies curriculum.

CKLA Listening and Learning

Domain 1: Fables and Stories

- This domain will introduce students to fables and stories that have been told for generations.

Domain 2: The Human Body

- This domain introduces students to a network of body systems that work together to perform vital jobs. Students also learn about germs and how to stop their spread.

Domain 3: Different Lands, Similar Stories

- This domain will introduce students to three themes in folktales using variations from different lands. Students will increase their vocabulary and reading comprehension throughout this domain.

Domain 4: Early World Civilizations

- This domain will introduce students to the development of early civilizations by examining the fundamental features of civilizations, including the advent of farming, establishment of cities and government, and creation of other practices, such as writing and religion.

Domain 5: Early American Civilizations

- The domain includes a study of the Maya, Aztec, and Inca civilizations, exposing students to the gradual development of cities. Students will examine the fundamental features of the Maya, Aztec, and Inca, including farming and the establishment of cities and government.

Domain 6: Astronomy

- In this domain, students will be introduced to the solar system—our home in space. They will learn that Earth, the planet on which we live, is just one of many different celestial bodies within the solar system. They will learn how the sun, the stars, the moon, and the other planets relate to Earth.

Domain 7: The History of the Earth

- In this domain, students will learn about the geographical features of the earth's surface. They will also learn about the inside of the earth and characteristics of its various layers

Domain 8: Animals and Habitats

- This domain will introduce students to the wonder of the natural world, focusing on the interconnectedness of all living things with their physical environment and with one another. Students will learn what a habitat is and will also learn to identify specific types of habitats and their related characteristics.

Domain 9: Fairy Tales

- In this domain, students will learn about the elements of fairy tales that distinguish them from other types of fiction and elements that they share with other types of fiction.

Domain 10: A New Nation – American Independence

- In this domain, students will hear about the beginnings of the United States of America. They will be introduced to many important historical figures and will learn the story of how the colonies became a nation.

Domain 11: Frontier Explorers

- In this domain, students will learn about the American frontier and the explorers that played an important role in the westward expansion of the United States.

Shurley Grammar

Shurley Grammar 1

- Students will study nouns, verbs, adverbs, adjectives, prepositions, and pronouns, along with how these parts of speech interact in sentences. Students focus on the five parts of a complete sentences to form the building blocks of successful writing.

Zaner-Bloser Handwriting

1st Grade

- Students will continue to practice manuscript letters through a step-by-step process. Students also continue to practice evaluating their own handwriting for meaningful application across subject areas.

Listening and Learning: 2nd Grade

This grade-level based course includes the acquisition of rich background knowledge on topics that overlap with our science and social studies curriculum.

CKLA Listening and Learning

Domain 1: Fairy Tales and Tall Tales

- This domain will introduce students to fairy tales and tall tales that have been told for generations.

Domain 2: Early Asian Civilizations

- This domain will introduce students to the continent of Asia and its two most populous countries, India and China. Students will learn about the early civilizations in India and China and how they were both able to form because of mighty rivers.

Domain 3: The Ancient Greek Civilization

- This domain will introduce students to the ancient Greek civilization whose contributions can be seen in many areas of our lives today.

Domain 4: Greek Myths

- This domain builds on The Ancient Greek Civilization domain and will introduce students to several well-known Greek myths and many well-known mythical characters.

Domain 5: The War of 1812

- This domain will introduce students to an important period in the history of the United States—the time during the War of 1812, which is often called America’s second war for independence.

Domain 6: Cycles in Nature

- This domain will introduce your students to the many natural cycles that make life on Earth possible. These cycles include seasonal cycles, flowering plants and trees, animal life cycles, and the water cycle.

Domain 7: Westward Expansion

- In this domain, students will learn about the time of westward expansion during the 1800s and the reasons for the move westward. Students will study the innovations that made travel possible and will understand the hardships encountered.

Domain 8: Insects

- In this domain, students will study the largest group of animals on Earth – insects! Students will learn the characteristics, life cycles, and categorization of insects, along with how insects can be helpful or harmful.

Domain 9: The U.S. Civil War

- This domain will introduce students to an important period in the history of the United States. Students will learn about the controversy over slavery between the North and the South, which eventually led to the U.S. Civil War.

Domain 10: The Human Body

- This domain will introduce students to cells as the building blocks of life on Earth. Students will learn about how organs work in the body and will study the work of Anton van Leeuwenhoek and the microscope. Students will also study the digestive and excretory systems.

Domain 11: Immigration

- This domain will introduce students to the concept of immigration in the United States and the reasons people immigrate.

Domain 12: Fighting for a Cause

- This domain will introduce students to several ordinary people who stood up for what they believed in and who fought for a cause, including causes such as the abolition of slavery, rights for women, and the welfare of migrant workers.

Shurley Grammar

Shurley Grammar 2

- Students will study nouns, verbs, adverbs, adjectives, prepositions, and pronouns, along with how these parts of speech interact in sentences. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students also focus on helping verbs.

Zaner-Bloser Handwriting

2nd Grade

- Students master their manuscript writing in the 2nd grade Zaner-Bloser curriculum. Students continue to practice proper formation and begin to write longer passages while evaluating their own penmanship.

Listening and Learning: 3rd Grade

This grade-level based course includes the acquisition of rich background knowledge on topics that overlap with our science and social studies curriculum.

CKLA Listening and Learning

Domain 1: The Wind in the Willows

- Students are introduced to the adventures of Mole, Rat, Badger, and Toad in selections from *The Wind in the Willows* to reinforce understanding of story elements and experience rich vocabulary, language, and syntax.

Domain 2: Classifying Animals by Characteristics

- Students are introduced to the science of classification. They learn about five groups of vertebrates, why scientists classify animals into groups, and the characteristics of these groupings.

Domain 3: The Human Body – Senses and Systems

- In this domain, students examine the structure and functions of the skeletal, muscular, and nervous systems. Students also learn about the senses of sight and hearing, and how the eyes and ears work.

Domain 4: The Ancient Roman Civilization

- Students are introduced to ancient Roman society and the rise and decline of the Roman Empire. They learn about Roman geography, government, major leaders, monumental battles, myths and legends, social class structure, and forms of entertainment.

Domain 5: Light and Sound

- Students learn about the properties of light and sound, how light and sound travel, and how light and sound can be manipulated. They also learn about the life and contributions of Alexander Graham Bell, including his experience with teaching the deaf.

Domain 6: The Viking Age

- Students are introduced to the seafaring warriors from Scandinavia known as Vikings. Students also learn about the culture, beliefs, and everyday life of the Norse people.

Domain 7: Astronomy – Our Solar System & Beyond

- Students learn about the planets in our solar system, as well as celestial objects such as asteroids, meteoroids, and comets. They are also introduced to galaxies, the Big Bang theory, and key people involved in the study and exploration of space.

Domain 8: Native Americans – Regions and Cultures

- In this domain, students learn about early migrations across a land bridge from Asia to North America. They learn how early Native American people moved across the Americas and how they adapted to their new environments.

Domain 9: European Exploration of North America

- Students learn about the motivations behind European exploration and how those motivations changed over time. They also learn how Europeans interacted with Native Americans.

Domain 10: Colonial America

- Students learn how the English colonies in North America were established and how each developed a distinctive culture. They also learn how the climate, geography, and motivations of the settlers influenced life in each of the 13 colonies.

Domain 11: Ecology

- Students learn about how all living species in an ecosystem are interdependent and interconnected. They learn about changes to the environment due to natural occurrences and the actions of people.

Shurley Grammar

Shurley Grammar 3

- Students will study nouns, verbs, adverbs, adjectives, prepositions, pronouns, conjunctions, and interjections. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students expand their understanding of grammar and apply this knowledge to their own writing.

Zaner-Bloser Handwriting

3rd Grade

- Students learn to write in cursive using four basic strokes as their guide. Students practice proper form in their cursive writing and evaluate their own penmanship.

Primary ELA Skills 1

Primary ELA Skills 1 begins with the fundamental groundwork for reading and writing. During this course, students focus on pre-reading and early reading activities.

Unit 1

- Unit 1 lays the groundwork for reading and writing. Students build awareness of environmental noises, of words within sentences, and of sounds within words. They also learn several writing strokes used to create letters.

Unit 2

- In Unit 2, students learn how to blend syllables together to form multisyllabic words. They also learn how to orally produce two- and three-sound words by blending sounds.

Unit 3

- In Unit 3, students are introduced to eight sounds, and they practice blending these sounds into words. They also learn how to form the letters that make these sounds.

Unit 4

- Unit 4 introduces students to eight new sounds. Through oral language games, chaining exercises, and story demonstrations with the decodable Big Book (Pet Fun), students practice blending these sounds into words. Students also practice previously learned letter-sound correspondences.

Unit 5

- Unit 5 introduces students to eight new sounds, including a spelling alternative for /k/. Through oral language games, chaining exercises, and story demonstrations with the decodable Big Book (Ox and Man), students practice blending these sounds into words. Students also practice previously learned letter-sound correspondences.

Unit 6

- In Unit 6 students are encouraged to automatize the letter-sound correspondences and blending procedures they have learned so far. They are introduced to consonant clusters, letter names, rhyming words, and reading text independently. The decodable Student Reader (with Big Book) for Unit 6 is Kit.

Unit 7

- Unit 7 introduces students to digraphs. Students develop automaticity in blending and segmenting these sounds through phonemic awareness activities, chaining exercises, practice worksheets, and reading of their decodable Student Reader, Seth.

Unit 8

- Unit 8 introduces students to double-letter spellings for consonant sounds, as well as seven high-frequency Tricky Words. Results from this unit's student performance task assessment inform which students are ready for the next unit and those who need targeted support with previously taught skills. The decodable Student Reader (with Big Book) for Unit 8 is Sam.

Unit 9

- In Unit 9 students practice writing uppercase letters and learn 17 new Tricky Words. This unit also introduces worksheets with story questions, comprehension questions related to the decodable Student Reader, Zack and Ann.

Unit 10

- Unit 10 introduces students to five new vowel sounds and eleven additional Tricky Words. The decodable Student Reader for Unit 10 is Scott. Students are administered a cumulative End-of-Year assessment, the results of which can be shared with first grade teachers via the End-of-Year Summary sheet included in the Student Workbook.

Primary ELA Skills 2

Primary ELA Skills 2 builds on the work students complete in Primary ELA Skills 1. Students continue their work in phonics by learning new phonemes and graphemes, working with Tricky Words, and learning Tricky Spellings. Students also work to become stronger writers.

Unit 1

- Unit 1 reviews concepts from Primary ELA Skills 1 and introduces Tricky Spellings (spellings that can be sounded more than one way) and Tricky Words (words that cannot be sounded out using the letter-sound correspondences taught so far). The decodable Student Reader for Unit 1 is Snap Shots.

Unit 2

- Unit 2 introduces five vowel sounds and the most common (or least ambiguous) spelling for each sound. Students learn to read and write words with separated digraphs (such as a and e in cake). The unit also includes practice with new Tricky Words. The decodable Student Reader for Unit 2 is Gran.

Unit 3

- Unit 3 introduces students to five vowel sounds and the most common spelling for each sound, five new Tricky Words, and the Tricky Spelling “oo.” Students begin formal instruction in the writing process with a focus on narrative writing. The decodable Student Reader for Unit 3 is Fables.

Unit 4

- Unit 4 introduces the most common (or least ambiguous) spellings for /r/-controlled vowel sounds. Students learn the concept of a syllable and practice with two-syllable words. The decodable Student Reader for Unit 4 is The Green Fern Zoo.

Unit 5

- In Unit 5, students begin learning spelling alternatives that make up the advanced code. They plan, draft, and edit a letter in which they express their opinions to the main character of the decodable Student Reader for Unit 5, Kate’s Book.

Unit 6

- In Unit 6, students continue work with several spelling alternatives for consonant sounds. They plan, draft, and edit a personal narrative. The decodable Student Reader for Unit 6 is Grace.

Unit 7

- In Unit 7, students continue to learn the advanced code, focusing on spelling alternatives for vowel sounds. Students practice the writing process by planning, drafting, and editing an informative/explanatory text. The decodable Student Reader for Unit 7 is Kay and Martez. Students also take cumulative End-of-Year assessment to assess learning throughout the year.

Primary ELA Skills 3

Primary ELA Skills 3 builds on the work students complete in Primary ELA Skills 2. Students continue to learn new phonemes and graphemes, with an emphasis on phonemes that are especially tricky. Students expand their writing skills to a variety of genres.

Unit 1

- Unit 1 reviews concepts from Primary ELA Skills 2 and focuses on various spellings with an emphasis on consonant sounds, one- and two-syllable words, and high-frequency Tricky Words. The decodable Student Reader for Unit 1 is The Cat Bandit.

Unit 2

- This unit focuses on various spellings with an emphasis on vowel sounds. Students read one- and two-syllable words, as well as contractions. They practice with a number of high-frequency Tricky Words. They learn about the use of quotation marks and begin instruction in the writing process, writing narratives and opinions. The decodable Student Reader for Unit 2 is Bedtime Tales.

Unit 3

- Unit 3 introduces spelling alternatives for vowel sounds, as well as various tricky spellings (spellings that can stand for more than one sound, such as “o” in hop or open). Students practice writing a personal narrative. Students are also introduced to antonyms and synonyms. The decodable Student Reader for Unit 3 is Kids Excel.

Unit 4

- Students are introduced to more spelling alternatives for vowel sounds, as well as three tricky spellings (spellings that can stand for more than one sound, such as “y” in try or yes). Students practice persuasive writing in a friendly letter. The decodable Student Reader for Unit 4 is The Job Hunt.

Unit 5

- Unit 5 introduces spelling alternatives for vowel sounds and the schwa sound. Students practice chunking phonemes to read multi-syllable words. Additionally, students continue to practice narrative writing by rewriting an ending to a story from their decodable Student Reader, Sir Gus.

Unit 6

- Unit 6 introduces several new spelling alternatives for vowel and consonant sounds. Students review grammar skills and learn about adverbs. They also learn to distinguish complete from incomplete sentences, as well as how to identify and correct run-on sentences. Students are introduced to expository or report writing. The decodable Student Reader for Unit 6 is The War of 1812. Students also take cumulative End-of-Year assessment to assess learning throughout the year.

Primary ELA Skills 4

Primary ELA Skills 4 builds on the work students complete in Primary ELA Skills 3. Students read longer passages and stories and increase their writing stamina.

Unit 1

- Unit 1 reviews concepts from Primary ELA Skills 3 and focuses on a series of literary excerpts in the Student Reader, *Classic Tales*. In addition, a Beginning-of-the-Year Assessment is administered to each student in order to identify code knowledge gaps.

Unit 2

- Unit 2 introduces the Skills components of spelling, grammar, and morphology. Students also read Rattenborough's *Guide to Animals* and learn about warm-blooded and cold-blooded animals, vertebrates and invertebrates, and how scientists classify living things.

Unit 3

- In Unit 3, students continue to learn and refine skills in spelling and dictionary use. They also learn how to write a paragraph with a topic and concluding sentence. Through their Reader, *How Does Your Body Work?*, students learn about the skeletal, muscular, and nervous systems of the body.

Unit 4

- In Unit 4, students continue their practice with spelling and dictionary use. Through their Student Reader, *Stories of Ancient Rome*, they compare and contrast present-day Rome with the Ancient Roman Empire, learn about the legend of Romulus and Remus, and read several Roman myths.

Unit 5

- In Unit 5, students learn how to build sentences using adjectives, adverbs, and synonyms. They also practice reading and spelling words with the /ee/ and /ae/ sounds. Through the Student Reader, *Adventures in Light and Sound*, they are introduced to the concepts of refraction, reflection, pitch, volume, and intensity.

Unit 6

- Unit 6 contains a Mid-Year Assessment that evaluates students' ability to apply grade 3 skills taught thus far. Through the Student Reader, *Gods, Giants, and Dwarves*, students learn about Norse mythology.

Unit 7

- In Unit 7, students explore their Student Reader, *What's in Our Universe*, they build a greater understanding of the universe and the celestial bodies within it. At the end of the unit, students apply note-taking skills and their knowledge of the qualities of strong paragraphs to write a research paper on a topic about astronomy.

Unit 8

- Unit 8 uses the student Reader, *Native American Stories*, to depict specific groups of Native Americans living in various regions of North America from an earlier period. As students read the text, they consider how people adapt to their environment and how that adaptation can shape their culture.

Unit 9

- In unit 9, through their Reader, *The Age of Exploration*, students learn about navigation, early notions of the location of continents, and journeys to new lands.

Unit 10

- In Unit 10, students continue to build skills in spelling and writing. Through their Reader, *Living in Colonial America*, students learn about life in each of the 13 colonies as well as what it was like for people to settle in a new land.

Unit 11

- Unit 11's Student Reader, *Introduction to Ecology*, familiarizes students with the concepts of food chains, the balance of nature, changes to the environment, and protecting the environment. Students also take cumulative End-of-Year assessment to assess learning throughout the year.

Primary ELA Skills 5/Intermediate ELA 1

Primary ELA Skills 5/Intermediate ELA 1 is available to 2nd through 5th grade students. Readiness for this course is shown through a grade of 60% or above in Primary ELA 4. Test scores are also considered when determining readiness.

Core Knowledge

Brown Girl Dreaming

- Students begin the year identifying, describing, and using elements of a memoir, through the study of *Brown Girl Dreaming*. Students will follow author Jacqueline Woodson through her free verse exploration of her early years. Students review the writing process and engage in an extended writing project.

The Middle Ages

- Students develop reading and writing skills through engagement with informational text in the Student Reader *Knights, Castles, and Chivalry*. Students learn about the feudal system, chivalry, manors, the growth of towns, the Magna Carta, the plague, and more. Students engage in an extended writing project.

King Arthur and the Round Table

- Students explore their own personal values through the legends of King Arthur and his knights. As they continue their study of the writing process, students look at the differences between verse and prose in narratives. Students focus on character and dialogue in their writing as they draft and publish a short story.

Listen, My Children

- Students conduct a study of poetry as a genre of literature that is unique for many reasons. Students will focus on literary techniques used in that poetry, such as figurative language, rhyme

schemes, metaphor, and repetition. Students will also examine specific vocabulary associated with poetry.

Geology

- This unit explores the relationships between different geological processes and how they affect the landscape and related environments of the earth. Students practice their writing, spelling, grammar, and morphology skills, and work on an extended writing project

The American Revolution

- The American Revolution focuses on the disagreements about principles of government which led the colonists in North America to seek independence from Great Britain. Students will review the stages of the writing process and engage in an extended writing project.

The United States Constitution

- In this unit, students will address the question: How was the United States Constitution created, and why has it lasted for more than 200 years? Students will explore the Articles of Confederation and other factors that led to the writing of the Constitution. They will finish the unit by writing an opinion piece.

Treasure Island

- Students will explore *Treasure Island*, which is a literary text in the subgenre of adventure story. Students will focus on character development, setting, and plot, as well as literary devices, while reading an abridged version of Robert Louis Stevenson's popular adventure story. Students will be engaged in an extended writing project.

Caesar's English

Caesar's English I

- Caesar's English I teaches students important vocabulary while giving them wide-ranging insight into the ancient world and its contributions to our lives, including the Latin, which is the foundation of modern academic English.

Optional Unit: William & Mary

Mind Your Time

- In *Mind Your Time*, the reading selections and the activities were designed to intrigue and challenge students to think about time and its role in their lives. This unit is centered on the concept of time and will involve a wide variety of literature to provide context for discussions, writing, listening, vocabulary studies and research activities.

Primary ELA 6/Intermediate ELA 2

Intermediate ELA 2 is available to 3rd through 5th grade students. Readiness for this course is shown through a grade of 60% or above in Primary ELA 5 or Intermediate ELA 1. Test scores are also considered when determining readiness.

Core Knowledge

The Call Me Güero

- In this unit, students study contemporary fiction through the novel, *They Call Me Güero*, which is written in various forms of poetry. Through *They Call Me Güero*, students explore aspects of living on the border between two countries. Students review the writing process and engage in an extended writing project.

Early American Civilizations

- Students develop reading, writing, listening, and thinking skills through engagement with informational texts. They learn about the innovations and discoveries made in these civilizations and read some of their myths. Students use the writing process to write an informative or explanatory report that compares and contrasts the three civilizations.

Adventures of Don Quixote

- Students will learn that the *Adventures of Don Quixote* was originally written in the early 1600s by Miguel de Cervantes Saavedra who lived in Spain. This work represents a very popular genre of books during this period which recounted fantastic adventures, brave deeds, and fanciful romances of various fictitious knights. This is an abridged text for younger readers.

The Renaissance

- This unit provides students with a broad exposure to the art and literature of this time period, through the works of renowned masters such as Leonardo da Vinci, Michelangelo, Brunelleschi, Botticelli, Bruegel, Dürer, Van Eyck, Machiavelli, Castiglione, Cervantes, and Shakespeare.

A Midsummer Night's Dream

- Students will review what they learned about William Shakespeare in the Renaissance Unit and continue to assess why his work is still important today. Students will read an adaptation of *A Midsummer Night's Dream* and will analyze literary elements such as character, setting, theme, plot (series of events), conflict, resolution, point of view, and dialogue.

The Reformation

- In this unit, students learn about the Reformation, a movement involving religious and political upheaval. Gutenberg's invention of an efficient printing press helped fuel the Reformation movement and allowed Martin Luther's and others' ideas to spread quickly. Great advances in science were also made during this time.

Poetry

- In this unit, students will learn that the poems in this unit are drawn from various literary traditions over the last several centuries. The poets and their poems are diverse, representing a variety of backgrounds and nations. Some of the poems employ meter and rhyme schemes, while others use free verse.

Native Americans

- Students will explore how the policies of the American government in the 1800s and contact between Native Americans and settlers, missionaries, traders, and explorers adversely affected Native American traditions, cultures, ways of life, and relationship with the land. The unit reveals the unique role Native Americans played during World War II.

Caesar's English

Caesar's English I/II

- Caesar's English I/II teaches students important vocabulary while giving them wide-ranging insight into the ancient world and its contributions to our lives, including the language of the ancient Romans: Latin, which is the foundation of modern academic English.

Optional Unit: William & Mary

Perspectives

- The guiding theme of this unit is the recognition that people have their own perspectives based on their experiences in the world around them. The literature selections of the unit will allow students the opportunity to view and study multiple perspectives.

Intermediate ELA 3

Intermediate ELA 3 is available to 4th and 5th grade students. Readiness for this course is shown through a grade of 60% or above in Primary ELA 6 or Intermediate ELA 2. Test scores are also considered when determining readiness.

Core Knowledge

Flying Lessons and Other Stories

- In this unit, students will practice reading and writing short stories, using a collection of selected stories from *Flying Lessons & Other Stories*. Written by middle-grade authors representing a wide array of cultures and experiences, these stories and your classroom discussion will give students the opportunity to explore the diverse backgrounds.

Calling All Minds: how to Think and Create Like an Inventor

- This unit addresses science topics in an informational text read as part of the language arts program. Students will learn about inventors, inventions, and the use of problem-solving logic. Students will focus on the literary skills examining different kinds of text structure such as problem and solution, cause and effect, sequential, and procedural text structures.

The Heritage of Ancient Greece and Rome

- This unit provides context about ancient Greece and Rome. In this unit, students will focus on differentiating sentence structures, correct sentence punctuation, and Greek and Roman roots and affixes in the English language. Students will also write a research essay.

The Iliad, the Odyssey, and Other Greek Stories

- Students will examine ancient Greece through epic stories and myths where heroes face enormous and frightening challenges and meet those challenges with bravery and ingenuity. Students will focus on the literary skills of character perspective and motivations, as well as linear and non-linear sequences of events. They will explore how myths are shaped by and how they communicate the values of a particular culture at a specific point in time.

The Tragedy of Julius Caesar

- This unit focuses on themes of friendship, betrayal, and leadership. Students will identify how themes are introduced and developed through a dramatic work, how a historical drama

can prompt us to reflect upon events in history, and how the distinctly different experiences of reading and viewing a play can cause us to examine the events, characters, motivations, and themes in a drama in different ways and in different contexts. Students will read excerpts from Shakespeare’s Julius Caesar.

90 Miles to Havana

- This unit focuses on Latin American history, specifically the Cuban Revolution. At the end of the unit, students will have the opportunity to compare/contrast the Cuban Revolution as presented in informational text and historical fiction and analyze the value of each type of text. Students will read *90 Miles to Havana* by Enrique Flores Galbis, in which the author reflects on his experience leaving Cuba at the beginning of the Cuban Revolution.

The Blessings of Liberty – Vol. 1

- focuses on movements for justice, rights, and freedom in the United States by addressing historical subjects through language arts. It examines the dialogue that has evolved between the ideas enshrined in the Constitution of the United States and subsequent political, social, and legal movements and texts. The unit asks students to consider the ways in which the United States has lived up to its ideal of creating a “more perfect union” and calls attention to areas where it has fallen short. In particular, students will focus on the issues of racial and gender discrimination and equality, with an emphasis on voting rights for Black Americans and women.

Realms of Gold – Vol. 1

- This unit focuses on examining poetry. The poems in this unit are grouped and taught by poetic form, such as ode, lyrical, didactic, and historical poetry. While reading, students will focus on sound, structure, meaning, tone, conflict, diction, figurative language, and the speaker’s viewpoint.

Shurley Grammar

Shurley Grammar 6

- Students will study nouns, verbs, adverbs, adjectives, prepositions, pronouns, conjunctions, and interjections. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students expand their understanding of grammar and apply this knowledge to their own writing.

Optional Unit: William & Mary

Literary Reflections

- Although all four language arts strands of literature, writing, language study, and oral communication are integrated into this unit, the core involves students interacting with literature while enhancing reading comprehension and textual analysis skills. The literature selections, including *The Secret Garden* and world-class short stories by such authors as Tolstoy and Singer, serve as a basis for discussion.

Intermediate ELA 4

Intermediate ELA 4 is available to 4th and 5th grade students. Readiness for this course is shown through a grade of 60% or above in Primary ELA 6 (in cases where test scores show readiness for a higher level than Intermediate ELA 3) or Intermediate ELA 3. Test scores are also considered when determining readiness.

Core Knowledge

Hello, Universe

- The literary skills addressed in this unit highlight how authors develop and contrast points of view and perspectives, and how the elements of character, setting, and plot interact. Students will analyze the use of figurative language and identify and explain major literary themes in fictional literature. In this unit, students will read *Hello, Universe* by Erin Entrada-Kelly. The novel deals with issues such as bullying and disability, as well as friendship, self-discovery, and self-acceptance.

The Tempest

- This unit examines the play by William Shakespeare. This version of *The Tempest* has been adapted for a modern, school-age audience. Students will identify and analyze the elements of a drama such as characterization, mood, and theme. Students will also analyze dramatic structure, theatrical performance, and how to navigate Shakespearean language. Students will also write a dramatic scene in this unit.

The Strange Case of Dr. Jekyll and Mr. Hyde

- This unit explores historical accounts and fictional portrayals of Victorian London. It examines how an author develops a major theme throughout a novel. During this unit, students will read an abridged version of *Strange Case of Dr. Jekyll and Mr. Hyde* by Robert Louis Stevenson. Students will also write and publish an argumentative essay and support it with evidence.

The Time Machine

- This unit examines the features of science fiction through H.G. Wells' *The Time Machine*. Students will study characterization, character development, and theme development. Students will explore reasons why authors select specific points of view to tell a story and how the elements of character, setting, and plot interact. This text creates the perfect opportunity to analyze how figurative and descriptive language impact a story. Students will also write and publish an original narrative in the science fiction genre.

Realms of Gold – Vol. 2

- This unit examines poetry as a form of expression. The poems in this unit are grouped and taught by poetic form, such as narrative and historical poetry. Students will also read several short stories in this unit. Students will learn that short stories are a genre that can vary widely in form and subject. Students will also strengthen their understanding of the basic elements of storytelling. Students will plan, write, edit, and publish an original poem that mirrors the styles of some of the poems they are reading

The Genius of the Harlem Renaissance

- This unit examines a selection of essays, poems, and plays produced by Black writers in the early 1900s. Most of the works students will read in this unit were produced either by people who lived and took part in the artistic flourishing in Harlem, New York or by keen observers of the movement. In terms of literary skills, students will focus on analyzing the themes and ideas of an artistic movement and how they are expressed in a variety of texts. Students will also identify and analyze the central ideas and argumentative structure of nonfiction essays.

Anne Frank's Tales from the Secret Annex

- In this unit, students examine writings by Anne Frank. Anne's writing is important largely for its content, the fact that it expresses the thoughts and feelings of a young person caught up in a global war, and its literary qualities. In terms of literary skills, students will focus on relationships and characterization, figurative language, connotative meaning, point of view, and perspective. Students will follow a logical sequence of steps that guide them to the creation of an original, finished text that mirrors the styles of some of the narratives they have read in this unit.

Code Talker

- The unit focuses on *Code Talker*, a historical fiction novel by Joseph Bruchac, which draws on the author's Native American heritage. In terms of literary skills, students will have several assignments in which they focus on human relationships and interactions, characterization, figurative language, point of view, perspective, and irony. Students will analyze the role of culture in shaping a person's values and behaviors and will learn about the important role the Navajo code talkers played in World War II. Additionally, students will write research essays in this unit.

Shurley Grammar

Shurley Grammar 7

- Students will study nouns, verbs, adverbs, adjectives, prepositions, pronouns, conjunctions, and interjections. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students expand their understanding of grammar and apply this knowledge to their own writing.

Optional Unit: William & Mary

Patterns of Change

- The concept of cyclic patterns of change was chosen as the unifying theme for this unit. Selected literary works deal with cycles in nature, knowledge, history, and human life. Students are introduced to some of the important approaches and ideas of literary criticism. Students are encouraged to use journals, literature webs, essays, and visual projects to organize and express their ideas about various literary selections. Works studied in the unit include *My Daniel* by Conrad, "The Helpful Badger" by Lawrence Yep, and poetry by Dickinson, Sandburg, Angelou, and Shakespeare.

Middle School ELA 1

Middle School ELA 1 is available to 6th-8th grade students. Readiness for this course is shown through a grade of 60% or above in Intermediate ELA 2. Test scores are also considered when determining readiness.

OAT

Ancient Origins

- The first module is centered around Simon Armitage's radio play based on Homer's *Odyssey*. Students will also explore the concept of mythology in terms of the origin of stories. They will read a range of creation myths from around the world as well as exploring what it is to be a hero by comparing various stories from Greek myth as well as extracts from the *Iliad* dealing with the story of Achilles and the Sumerian Epic of Gilgamesh, the oldest piece of literature of which we are aware. Students will also read texts inspired by the *Odyssey* by Tennyson, Margaret Atwood, and Carol Ann Duffy.

Links to Legends

- This module builds on the ideas presented in *Ancient Origins* and shifts the story of English to some of the earliest works of literature in English. Students will experience *Beowulf*, the oldest existing piece of English literature, alongside some of the texts it has inspired. Students will read extracts from translations and well as take a brief foray into Old English. From there, students will jump to Arthurian legend through the lens of Simon Armitage's version of *Sir Gawain and the Green Knight*, as well as extracts from Mallory's *Le Morte D'Arthur*. Finally, students will read some of the foundational legends from China (*Journey to the West*, *Wu Cheng'en*) and the Middle East (*A Thousand and One Nights*).

The Art of Rhetoric

- This introduction to rhetoric revolves around Shakespeare's play *Julius Caesar*. The module is divided into 5 sections, each focusing on one of the five acts of *Julius Caesar* and also on one of the five parts of rhetoric: invention, arrangement, style, memory and delivery. In each section, students are introduced to a range of great speeches from literature and history. The module has two main aims: that students should read, perform, and enjoy *Julius Caesar*, and that they should be introduced to and experiment with different rhetorical forms.

The Story of Romance

- The final module of Middle School ELA 1 explores the genre of Romance from its origins to its transformation into Romanticism. To help students embed the conventions and concepts of Romance, students will read extracts from two Shakespeare plays: *A Midsummer Night's Dream* and *Romeo and Juliet*. From there, students get a glimpse into the world of Spenser's *Faerie Queen*. Students will also consider how Romance has become the modern fantasy genre.

Word Withing the Word I

Word Within the Word I

- The *Word Within the Word I* is a rigorous vocabulary text filled with readings and activities to illustrate the important role of Latin and Greek stems in academic English. In addition, the book contains an extensive discussion of the history of Greece in the Classical Period.

Shurley Grammar

Shurley Grammar 7

- Students will study nouns, verbs, adverbs, adjectives, prepositions, pronouns, conjunctions, and interjections. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students expand their understanding of grammar and apply this knowledge to their own writing.

Middle School ELA 2

Middle School ELA 2 is available to 6th-8th grade students. Readiness for this course is shown through a grade of 60% or above in Intermediate ELA 3/4 or Middle School ELA 1. Test scores are also considered when determining readiness.

OAT

The Sonnet

- In this unit, students trace the sonnet's origins to the thirteenth-century Italian court, with the primary exploration being through Petrarch, who was its most famous early practitioner. Students then move on to see how the form was adopted by the English in the Elizabethan period, most notably by Shakespeare, who gave it the structure we think of today: 14 lines of rhymed iambic pentameter. Students then continue to track the history of the sonnet and the modern experimentation of poets with the form.

The King James Bible's Influence on Literature

- The central concern of this module is to introduce students to the importance of Bible knowledge in the study of English literature, both in terms of studying it as literature and its influence on literature. This is entirely separate from studying the Bible as a religious text, instead focusing on its unique place in the study of English. In this unit, students compare selections to other literature, look at selections as poetry, and read literature based on stories from the Bible, including a medieval mystery play based on the story of Noah, extracts from *Pilgrim's Progress* and *Paradise Lost*, poetry by William Blake and Emily Dickinson, and even song lyrics from Bob Marley.

The Story of Comedy

- One of the difficulties for students studying comedy is that they don't always find the texts they read funny. The idea that comedy is synonymous with amusing is tackled early on, and we offer the definition that comedy is a plot structure which moves from chaos to order. Texts in this module include Shakespeare's *As You Like It*, Swift's 'A Modest Proposal,' Pope's 'The Rape of the Lock,' poetry from Edward Lear, Lewis Carroll, and more. Additionally, students will read *Hitchhiker's Guide to the Galaxy* to examine modern comedy.

The Story of the Novel

- Students begin their study of the novel with extracts from Aphra Behn's 'proto-novel' *Oroonoko* and Daniel Defoe's classic *Robinson Crusoe*. From there we sweep through the Eighteenth Century taking in extracts from Fielding's *Tom Jones*, *Evelina* by Frances Burney, and *Pride and Prejudice* by Jane Austen. We then consider extracts from Dickens, George Eliot, J.D. Salinger, and, finally, Chimamanda Ngozi Adichie. The anchor text for the module is *Great Expectations*.

Word Withing the Word II

Word Within the Word II

- The Word Within the Word I/II is a rigorous vocabulary text filled with readings and activities to illustrate the important role of Latin and Greek stems in academic English. In addition, the book contains an extensive discussion of the history of Greece in the Classical Period.

Shurley Grammar

Shurley Grammar 8

Students will study nouns, verbs, adverbs, adjectives, prepositions, pronouns, conjunctions, and interjections. Students continue to work with the five parts of the sentence, applying this to a variety of sentence types. Students expand their understanding of grammar and apply this knowledge to their own writing.

Advanced English 1

Advanced English 1 is available to 7th-8th grade students. Readiness for this course is shown through a grade of 60% or above in Middle School ELA 2. Test scores are also considered when determining readiness. This is a high school level course, and thus themes and texts are taught at a high school level and may include content typically taught in high school rather than middle school.

OAT

The Gothic

- The primary focus of the Gothic is to welcome students into a world of wild and remote landscapes, vulnerable heroines, supernatural happenings and uncanny events. Gothic fiction has intrigued and unsettled readers for more than two centuries, and as a result, the Gothic has become a staple of the academic study of literature. The very question of humanity and the human condition, as well as suffering and romance, are all key themes brought up and reflected in this dark and mysterious fiction. Students will gain a clear understanding of the critical literary movements and how different writers exploited the fears of the time focusing on Wuthering Heights as the primary novel but using a range of other texts and authors such as the Brontës, Toni Morrison, Mary Shelley, and Edgar Allan Poe to present the development of Gothic literature through the centuries.

War Writing

- The second module is based around RC Sherriff's play Journey's End. Students are gripped as tension builds throughout the play and are often aghast at Osbourne's untimely death in the trenches. Alongside this, students will also be exposed a range of First World War poetry, especially the poets Wilfred Owen and Siegfried Sassoon, as well as extracts from novels including Sebastien Faulk's Birdsong, Pat Barker's Regeneration, and Erich Maria Remarque's All Quiet on the Western Front. As well as these fiction works, there are various pieces of non-fiction. Students also examine Richard Curtis and Ben Elton's Blackadder Goes Forth. Finally, students will experience the one act play Mine Eyes Have Seen by African American writer Alice Dunbar-Nelson.

The Story of Tragedy

- Tragedies are an inherent part of human culture and literature. They are centered around sadness and death - misfortune and the descent of heroic characters. This unit looks to cover the key periods of tragedy. We begin with its formation by the Greeks, before going on to look at how the conventions of Greek Tragedy were then adapted in the medieval period and later into the Renaissance era. We then finish by looking at modern tragedy and its development from the classical tragedy earlier in the unit.

Freedom

- The anchor text is Mildred D. Taylor's *Roll of Thunder, Hear My Cry*. Students will read the work of other important figures of the Harlem Renaissance such as Langston Hughes, Claude McKay, and Paul Lawrence Dunbar as well as other writers who have used English either to argue for or as an expression of freedom. There are extracts from writers as diverse as Ta-Nehisi Coates, WE Du Bois, Maya Angelou and Alice Walker.

Women in Literature

- This unit focuses on women in literature: female writers, female narrators, iconic female protagonists. Beginning with the introduction of the greats such as Sappho and Aphra Benn, to the Victorian greatest literary sisters, the Brontë's and Charlotte Mew's modernist poetry to the transformation into modern day literature such as extracts from the dystopian, *The Handmaid's Tale* and *The Purple Hibiscus* as they battle for freedom and hope for the future. *The Yellow Wallpaper* as the primary text for this unit.

Advanced English 2

Advanced English 2 is available to 8th-9th grade students. Readiness for this course is shown through a grade of 60% or above in Advanced English 1. Test scores are also considered when determining readiness. This is a high school level course, and thus themes and texts are taught at a high school level and may include content typically taught in high school rather than middle school.

OAT

MacBeth

- Students continue the study of Shakespeare that they began in previous levels of Telra's English Language Arts course of study as they take on *MacBeth*. As students transition into the next level of the OAT curriculum, students begin to increase the rigor required for their written analyses of literary works. Through a study of *MacBeth*, students examine different facets of the play and plan written responses for each. Students then move further into the writing process, refining one of their written plans into a full-length essay.

Dystopia

- In this unit, students will be immersed in dystopian worlds through high quality text which offer a rich array of linguistic analysis and have shaped how we use and think of language. Students will engage with *Brave New World* by Aldous Huxley, 1984 by George Orwell, *The Handmaid's Tale* by Margret Atwood, and *The Road* by Cormac McCarthy. This unit will be revisited by our 8th grade students when they circle back to the idea of utopias in the second semester.

Unseen Poetry

- In the Unseen Poetry unit, students develop their analytical reading skills by exploring a wide range of unfamiliar poems from both classic and contemporary writers. Poets studied include Emily Dickinson, Langston Hughes, Carol Ann Duffy, and Simon Armitage, among others. Students learn to approach poetry independently, identifying key themes, tone, language choices, and structural techniques without prior context. Building on their knowledge of poetic devices and interpretive strategies, students practice writing comparative and exploratory responses under timed conditions. The unit fosters confidence in engaging with new texts and equips students with the tools to articulate thoughtful, evidence-based interpretations.

A Christmas Carol

- Students explore Charles Dickens' classic novel *A Christmas Carol* as part of their continued development in literary analysis within the OAT curriculum. Building on their prior knowledge of narrative structure and character development, students examine the transformation of Ebenezer Scrooge and the social and moral themes embedded in the text. They engage in close reading, discussion, and analytical planning to unpack Dickens' use of language, symbolism, and tone.

The Discovery of Deduction

The Discovery of Deduction

This curriculum will introduce students to the realm of formal, deductive logic. Formal logic studies how an argument is put together—the form or structure of an argument—as well as its real-world implications. Using methods such as Socratic dialogue, ample discussion, and integration of other subjects, it teaches the ways in which these dialectic students learn best. Example scenarios, exercises, points to remember, quotes, charts, and thorough lessons will help students grasp the concepts presented and be able to apply them.

Rhetoric / Honors English 2

Rhetoric is available to 9th and 10th grade students who have earned an English 1 credit.

Rhetoric Alive

Principles of Persuasion

- The highly engaging *Rhetoric Alive!* explores the principles of winsome speech as developed in the foremost text on persuasion, Aristotle's *Rhetoric*. The 15 chapters of *Rhetoric Alive!* step through the essential components of persuasion—the three appeals, the three types of speech, and the five canons. Each chapter includes an exemplary classic text for analysis and discussion, spanning from Pericles's "Funeral Oration" to Martin Luther King, Jr.'s, "Letter from Birmingham Jail." Students also have plenty of opportunities to practice developing their own rhetorical skill through weekly workshops, imitation assignments, and oratory presentations.